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Remarks

ON

TUBERCULOSIS OF THE LARYNX AND ARTIFICIAL SUNLIGHT TREATMENT*

BY

SIR STCLAIR THOMSON, M.D., F.R.C.P., F.R.C.S.

LARYNGOLOGIST TO KING EDWARD VII SANATORIUM, MIDHURST; EMERITUS PROFESSOR OF LARYNGOLOGY IN KING'S COLLEGE HOSPITAL, LONDON

Some years have passed since the therapeutic use of artificial light—violet rays, ultra-violet light, etc.—reached what we may call its "boom" period. In early days some investigators promptly followed, with brilliant results, the sage advice of the French savant in regard to new remedies: "Hâtons-nous de les utiliser pendant qu'elles sont encore efficaces." But in certain common conditions—such as debility in children, catarrh, the common cold, rheumatism, etc.—where good results might have been looked for, reports have been available for some time, and are mostly disappointing.

In a disease so slow in complete healing and so kaleidoscopic in its behaviour as tuberculosis, an investigation must necessarily take a long time. It is also difficult to assess the value of any new form of treatment which has to be carefully compared with the well-established results of sanatorium methods and the reliable assistance of the galvano-cautery and thoracic surgery. Seven years have therefore elapsed since the consulting medical staff recommended the council of King Edward VII Sanatorium to install the necessary outfit at Midhurst. This advice was based on the encouraging reports received from various sources. The light treatment at that time was warmly recommended in tuberculosis of the larynx, and it was claimed that as many as 55 per cent. of cures could be obtained by employing this remedy. As our own efforts, based on the first ten years' experience of 477 cases under the best sanatorium conditions,[1] had only allowed us to claim 25 per cent. of cures in all cases, we were naturally anxious to test a method recommended by esteemed authorities in several countries. I do not propose to sketch the history of the method nor to supply a bibliography, although I have carefully studied both, for, unfortunately, my own experience at Midhurst has failed to confirm the earlier commendations.

Equipment and Technique

In a comfortable, well-warmed room two couches were arranged with lamps between them, so that two patients could share the light rays at the same time. Communicating with this room was a dressing room, equipped with a douche. The carbon lamps, obtained from Copenhagen, were exactly similar to those used and recommended in the Finsen Institute. The total cost of the installation was £518 19s. 4d., of which the structural alterations cost £188 1s. 8d. These figures are given to show that no expense was spared by the council in supplying the necessary armamentarium, and also so that other institutions may have some idea of what the expenditure is likely to be.

To feel assured that we not only had satisfactory and adequate appliances, but also that they were properly employed, I paid a visit to the Finsen Institute, and our medical superintendent, Dr. R. R. Trail, made a special journey to Copenhagen. Like myself, he was cordially and generously received by Dr. Strandberg, who did everything possible to help us in understanding the method of employing the treatment. To make doubly sure of this, a Danish nurse from the laryngological clinic of the Institute paid a visit of some weeks to Midhurst to instruct one of our nurses in the details of technique. In addition, during his visit to England in 1926, Dr. Strandberg very kindly came down to the sanatorium, and expressed himself as quite satisfied with our arrangements. We feel fairly confident, therefore, that the treatment had a trustworthy trial so far as equipment was concerned. I do not think it is necessary to go into details as to the particular lamps used, the strength of light employed, the length of exposure, the frequency of the baths, etc. We have followed the methods advised by the Danish authorities.

Cases Selected for Light Treatment

The first light treatment at Midhurst was given on November 18th, 1926. The present report deals with cases between that date and 1929, and includes all cases so treated during the three years. No case has been included which left the sanatorium after November, 1929. The list was then closed so as to enable us to trace the history of all these patients during two years after their discharge. In these three years, thirty-two cases of laryngeal tuberculosis were selected for trial; sixteen were males and sixteen females. These were chosen as suitable because they were favourable as regards (*a*) the situation in the larynx, (*b*) clinical nature of disease, (*c*) record of steady temperature, (*d*) condition of the lungs, (*e*) satisfactory type of patient, and (*f*) the indications of favourable resistance.

As evidence of the promising situation and limited extent of laryngeal disease, it was recorded that in no fewer than eleven instances (one-third of the group) there was no change in the voice. The discovery that there was a throat lesion was made owing to our custom of examining the upper air passage of every patient on admission. The laryngeal disease had not caused any voice change, because it had left unaffected both vocal cords and the posterior commissure stretching between them. Complete normal glottic closure had therefore been unimpaired, for in these cases the lesions had occurred above the level of the closed glottis, and consisted generally of limited and often unbroken deposits in the interarytenoid area, or in the region above the vocal processes—very favourable locations.

In all the thirty-two cases the appearances were those of a fairly quiescent type. No case was submitted to light treatment until voice rest (whispers or silence) and the general sanatorium treatment had shown that there was no activity, and that local as well as general conditions warranted the opinion that the case was well within the expectation of cure. Rectal temperature, morning and evening, was first charted for some weeks. Although some supporters of light treatment have recommended its employment even with pyrexia, urging that it would reduce fever, we have never been able to bring ourselves to disregard this valuable symptom as an indication for strict rest and a warning against any activity, physical or mental. This guiding principle was only strengthened by our experience in some of the cases, where each attempt to apply light treatment was checked by the onset of pyrexia. Needless to say, the treatment was never tried with patients undergoing strict (bed) rest.

Locality of Laryngeal Lesions

In the cases in which light treatment was given the laryngeal disease was generally early and limited, and, in the majority of cases, intrinsic—that is, the disease was in the interarytenoid area, or the cords or the ventricular bands. In no case was the crico-arytenoid joint invaded, and in no case was there any dysphagia. It was

*Made in the Section of Tuberculosis at the Centenary Meeting of the British Medical Association, London, 1932.

employed in only five extrinsic cases—three males and two females, in whom the epiglottis was invaded by a lupoid type of disease. In one of these light was discontinued owing to pyrexia, and the lupoid appearance took on a miliary form, the patient dying six months later. In one there was no improvement, and the epiglottis broke down six months later. In another no improvement took place, and the galvano-cautery had to be employed; this resulted in healing, which has now remained complete for three years. The fourth case also required the cautery before a cure could be obtained, and the fifth—a man of 56 with a small lupoid deposit on one side of the epiglottis—healed without other treatment.

All the patients willingly accepted the advice to try the light baths. They knew, by the tradition at the sanatorium, that "throat cases were longer" than the average pulmonary case, and they would gladly shorten the period of irksome silence. The method of treatment was far from unpleasant, and the Press, both lay and medical, was at that time very enthusiastic in recommending its benefits. These points are mentioned to indicate that many factors in suggestion were at work to further the therapeutic value of the treatment. These thirty-two cases were selected as being of the extent and type in which we had been accustomed, from twenty years' experience, to anticipate complete healing under the sanatorium regime, with the addition of voice rest and, in some cases, of the galvano-cautery. We therefore looked forward with considerable confidence to being able to support the claim of more certain and rapid healing with the added help of light treatment.

Results

The results have caused us much disappointment. We found that the treatment may be harmful, that only in a very small number of cases could any benefit be attributed to it, and that few of the thirty-two patients became enamoured of it or were anxious to persevere after an adequate trial.

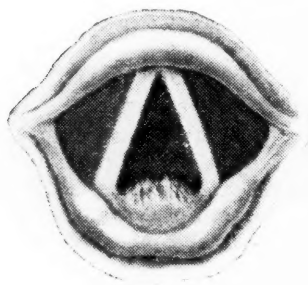

Fig. 1

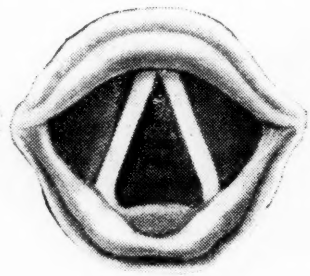

Fig. 2

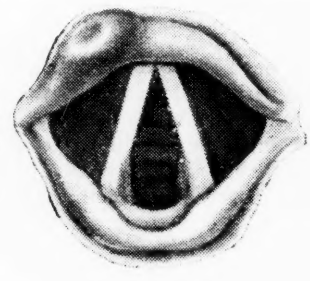

Fig. 3

Fig. 4

Fig. 1.—Typical interarytenoid abraded pyramidal deposit. Treatment by silence and artificial pneumothorax. Light treatment suited the patient, and had no ill effects on temperature; tubercle bacilli disappeared from sputum. After eight months' stay in sanatorium the deposit was still prominent.

Fig. 2.—Same as Fig. 1. A year after leaving sanatorium, without further treatment, the deposit became reduced and fibrosed.

Fig. 3.—Indolent ulcerating deposit over each vocal process and in subglottic area below; lupoid infiltration of right half of epiglottis, with indolent shallow ulcer on right margin. Seven months of silence and light treatment: no pyrexia; gain in weight; patient enjoyed baths; little or no improvement in larynx.

Fig. 4.—Same as Fig. 3. One treatment with the galvano-cautery was followed, in two months, by complete cicatrization, although tubercle bacilli remained present in the sputum.

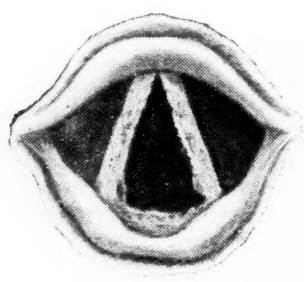

Fig. 5

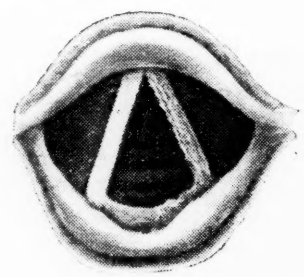

Fig. 6

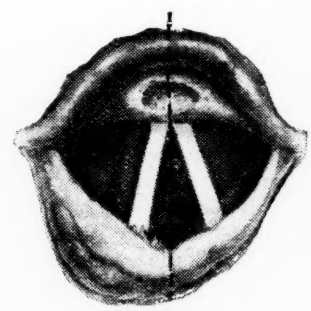

Fig. 7

Fig. 5.—Ulcerating deposit of both cords, with some pachydermia-like deposit over both vocal processes, and superficial, irregular, ulcerating interarytenoid deposit. Silence and light treatment for seven months without improvement. Three treatments with the galvano-cautery resulted in cure in three months, and healing has been maintained for three years.

Fig. 6.—An interarytenoid deposit, with the whole of the left cord infiltrated and ulcerated. Response to light treatment satisfactory; gain in weight; no pyrexia during the three months of treatment, and the rapid healing appeared to be expedited by the light baths.

Fig. 7.—No voice change; both cords sound. Right side of larynx much impaired in movement through extensive lupoid infiltration of all right arytenoid and aryepiglottic fold, with ulcerating stalactites in right interarytenoid area. Margin of the epiglottis red and swollen, and its laryngeal surface showed a deeply ulcerated infiltration, with an irregular, dirty grey, crater-like appearance. Patient soon lost his tubercle bacilli, gained weight, and left sanatorium at end of five months with larynx healed. Disease recurred two years later and again healed, but without light or treatment other than voice rest and sanatorium principles.

In the results displayed in figures we have an example of how misleading unanalysed statistics may be. Judged by final result alone a successful case might be made out in favour of light treatment, whereas an analysis of the figures clearly demonstrates what an ineffective addition it is to sanatorium methods.

Condition worse	1
Condition *in statu quo*	3
Condition improved	4
Condition cured	24
	32

To obtain twenty-four cures in thirty-two cases (75 per cent. of success) might be claimed as a much higher proportion than the average. As already stated, during a ten years' experience at Midhurst the average of cures in all cases of laryngeal disease only amounted to 25 per

cent. But that record was obtained in a series of 475 unselected cases, and in 103 of them chosen as suitable for the galvano-cautery we obtained 64.08 per cent. of cures.[2] When, therefore, we study the cures resulting in the twenty-four out of thirty-two cases submitted to light treatment we must consider the other factors which were at work. (*a*) All the cures were in patients selected as "favourable" as regards both local and general conditions. (*b*) In certain cases no improvement was seen after a trial, sometimes extending over five months, with the regular use of a bath of as much as thirty minutes' duration, given daily except on Sunday. (*c*) In several instances the baths had to be abandoned owing to loss of weight, or to their being followed by pyrexia or fatigue. (*d*) Healing took place later, in some cases three months and longer after the light had been discontinued. (Figs. 1 and 2.) (*e*) In eleven cases there was no improvement, or progress was so slow that the galvano-cautery was employed; healing was then secured in all the eleven cases. (Figs. 3, 4, and 5.) (One case had, in addition, an artificial pneumothorax.) (*f*) In three cases an artificial pneumothorax was performed. We have previously shown that a well-marked case of laryngeal tuberculosis, unaltered or worse after some months of silence, may be completely healed three months after the performance of an artificial pneumothorax.[3] (*g*) Deducting all such cases, we find that there were only seven out of the twenty-four cures in which, in addition to sanatorium regime and voice rest, light was the only other treatment.

Test Cases

The most rapid healing occurred in three months. The patient was a woman of 41, with a unilateral pulmonary lesion, chiefly pleuritic. (Fig. 6.) In the second case a cure was effected in five months—not a rapid result. The patient was on whispers all the time (there was no voice change), the lesion being a limited interarytenoid deposit. The third case was well in four months. The laryngeal lesion was limited, superficial, and one-sided, but the patient lost weight while undergoing the treatment, and his larynx relapsed afterwards. The treatment appeared to suit the larynx in the fourth case; it was healed in six months, but the patient lost weight, and left to have a pneumothorax performed elsewhere.

The larynx had not healed at the end of four months in the fifth case, a man of 32, with an irregular interarytenoid deposit, although tubercle bacilli had disappeared from his sputum, and his pulmonary signs (chiefly pleuritic) showed arrest. Three months later the larynx was clear. In the sixth case, a man of 56, only the epiglottis was affected with a lupoid infiltration. The disease was still present after six months of light treatment, although tubercle bacilli had disappeared and the lung disease was arrested. Four months later, without further treatment, the epiglottis had healed. The seventh case was also a lupoid case. The patient soon lost his tubercle bacilli, and left the sanatorium at the end of five months with the larynx much improved. Three months later it was healed, but the laryngeal disease recurred two years later, and again healed, this time without light baths or treatment other than voice rest and sanatorium regime. (Fig. 7.)

Conclusion

In thirty-two favourable cases there were no striking evidences of benefit from light treatment; in only two or three might some help from it be claimed. Nor can it be said that healing of laryngeal tuberculosis was hastened, or that the course of light baths in any way rendered subsequent cure by the cautery more rapid or more certain. Quite as good results have been obtained, and just as swiftly, with voice rest, sometimes supplemented with the galvano-cautery or artificial pneumothorax, and, in all cases, the sanatorium regime.

The whole picture of tuberculosis is so remarkably changed for the better under sanatorium conditions that many remedies which appear to be beneficial under ordinary hospital or home conditions are found to add nothing to the improvement wrought by hygienic living in unvitiated air. Hence the number of "negative findings" with many new remedies when tried in a sanatorium. Under other conditions it is possible they may be of help—by suggestion if not otherwise. The constant medical supervision and control available at Midhurst has enabled us to see the possible drawbacks, and even dangers, of light treatment if not carefully and regularly watched. Since the above series was ended in November, 1929, we have continued to try this remedy in well-selected cases, and the conclusion still is that, while it may appear to be of help in a very few cases, it probably acts only by suggestion; that it is fraught with danger if not scrupulously supervised; and that, on the whole, in patients in a well-ordered sanatorium it is no addition to the treatment at present in use.

References

1 Thomson, StClair: *Tuberculosis of the Larynx: Ten Years' Sanatorium Experience*, H.M. Stationery Office, 1924.
2 Idem: Tuberculosis of the Larynx: Treatment with the Galvano-Cautery, *Lancet*, 1926, i, 1084.
3 Thomson, StClair, and Trail, R. R.: Tuberculosis of the Larynx and Artificial Pneumothorax, *Lancet*, 1927, i, 963.

THE RADIOTHERAPY OF CARCINOMA OF THE UTERUS *

With Especial Reference to *X*-ray Treatment

BY

Professor FRIEDRICH VOLTZ

PRINCIPAL OF THE RADIOLOGICAL INSTITUTE, UNIVERSITÄTSFRAUENKLINIK, MUNICH

I am exceedingly happy to have the honour of addressing this Section of the British Medical Association on the occasion of its Centenary Meeting, and I should like to express my heartiest thanks. I fully realize that the honour done to myself is a recognition of the work of the gynaecological clinic of Munich University and of its Director, Professor Albert Döderlein. This work has opened up new avenues in the radiotherapy of uterine carcinoma, and its value has been acknowledged in the appointment of the clinic to serve, with the Radiumhemmet of Stockholm and the Institut du Radium of Paris, on the Commission appointed by the Hygiene Section of the League of Nations to study the radiological treatment of carcinoma.

A. Döderlein made the first attempt on these lines in 1903, when he endeavoured unsuccessfully to cure inoperable carcinomata of the uterus with a preparation of radium. Since 1912 he has treated every patient admitted to the clinic by radiotherapy alone, and has entirely given up the radical operation. The number of cases of carcinoma of the uterus treated in the succeeding twenty years has amounted to 3,000, and his experience with these large numbers has enabled him to assert definitely that radiological treatment does everything that radical surgery can do, while it is less dangerous and less drastic; moreover, it can be of use where operation is impossible. As a result of his experience Döderlein has written:

"I have long maintained that the day of the dangerous and drastic radical operation is over. If it is possible to treat women by a much simpler, a safe, and a painless method, with as much prospect of success, this method must be given preference over the knife."

*Read in opening a discussion in the Section of Obstetrics and Gynaecology at the Centenary Meeting of the British Medical Association, London, 1932.

Since, as I have said, I regard my selection for this task as an honour done to the clinic and a recognition of the value of its work, I ask leave to base my paper on the results and methods of the Radiological Institute of the clinic, touching on the results and methods of other workers only for the sake of completeness.

What Radiotherapy Alone Can Do

I will start with the question: What can radiotherapy by itself achieve in carcinoma of the uterus? My answer to this question is based on 1,973 cases of uterine carcinoma. All these patients have been under observation for periods of between five and twenty years, and during the last few months the material has been thoroughly checked through. The data available for each case are, therefore, statistically unexceptionable, a fact of extreme importance if the statistics themselves and the deductions based on them are to be of any value.

Cervical Carcinoma

From 1913 to 1926 inclusive 1,866 cases of cervical carcinoma were admitted to the clinic. Of these, 143, or 7.7 per cent., were not treated, most of them because they were quite hopeless, sometimes moribund, and some of them because they would not submit to the treatment prescribed and preferred to go elsewhere. For statistical purposes, therefore, and in order to assess the results of radiotherapy, the number of cases is 1,723. Of these 1,723 cases, 319 patients were alive and well after five years. The absolute cure figure is therefore 18.5 per cent. Table I shows their classification according to Döderlein's four groups, which have been recognized and adopted by the Radiological Commission of the Hygiene Section of the League of Nations as a basis for statistical investigations in this field.

Table I

Group	Number in Group	Number of 5-year Cures	Percentage
Group 1 (operable cases)... ...	326	141	43.2
Group 2 (borderline cases) ...	401	90	22.5
Group 3 (inoperable cases) ...	672	81	12.1
Group 4 ("incurable" cases) ...	324	7	2.1

As the period under review includes the beginning, development, and perfection of the radiological technique, I consider that these results, especially the figures of 1924–6, represent accurately the present-day possibilities of radiotherapy of carcinoma of the cervix. This is especially true since all material was treated on a uniform system.

During the three years 1924–6, 418 cases of cervical carcinoma were admitted to the clinic. Fourteen of these, or 3.3 per cent., were not treated, for the same reasons as those given for the 143 untreated cases in the whole group. The number of cases available for statistical purposes is therefore 404. Of these, 97 patients, or 24 per cent., were alive and well after five years. Table II gives their classification into Döderlein's groups.

Table II

Group	Number in Group	Number of 5-year Cures	Percentage
Group 1 (operable cases)... ...	99	49	49.4
Group 2 (borderline cases) ...	91	21	23.1
Group 3 (inoperable cases) ...	120	23	17.9
Group 4 ("incurable" cases) ...	85	4	4.9

Comparison with Operation Figures

I will now compare the cure rates in the cases treated in the years 1924–6 with the figures obtained by J. Heyman of Stockholm, from a study of all the available literature, for the results of operation. The cure rate for the whole of the material was 24 per cent.; for Group 1, 49.4 per cent., and for Groups 1 and 2 combined (operable and borderline together), 37 per cent. For operated cases the absolute cure figures is 19.1 per cent., and the relative cure figure is 35.6 per cent. The conclusion therefore seems justified that in carcinoma of the cervix exclusive radiotherapy is the only method worthy of consideration, and should be employed in every case. In the words of Döderlein, the day of radical operation for cervical carcinoma is over. This conclusion seems even more strongly justified if the following considerations are taken into account: (1) Döderlein's figures from the clinic show a primary mortality from radiotherapy of 0.8 per cent.; Heyman's figures for radical operation show a primary mortality of 17.2 per cent. (2) Radiotherapy in Group 3, consisting of undoubtedly inoperable cases, gave a five-year cure rate of 17.9 per cent., and in Group 4, consisting of "incurable" cases, one of 4.9 per cent.: every one of these patients would otherwise have died. (3) The percentage of cases which can be treated by radiotherapy is 96.7, while an average figure of operability in cervical carcinoma, compiled from all the available literature, is only 64.

Carcinoma of the Body of the Uterus

During the years 1913–26 inclusive 107 cases of carcinoma of the corpus uteri were admitted to the clinic and treated with radiotherapy alone. Of these 107 patients, 49, or 45.8 per cent., were alive and well after five years. These cases can be divided into two groups: A, operable; and B, undoubtedly inoperable. The five-year cure rate in Group A was 66 per cent. (43 cases out of 65), and in Group B 14.3 per cent. (6 cases out of 42). In order to show what the more recent methods of treatment can do I will give the results in cases treated during the period 1921–6 on a uniform system. The number of patients admitted with carcinoma of the body of the uterus and treated by radiotherapy alone was 39; of these, 24, or 62 per cent., were alive and well after five years.

Comparison with Operative Figures

A comparison between the cure rate for all the cases admitted in 1913–26 (45.8 per cent.), for all the cases admitted in 1921–6 (62 per cent.), and for Group A, the operable cases, over the long period (66 per cent.), and Heyman's average cure figures for radical operation (42.8 per cent. absolute and 56.8 per cent. relative), makes it absolutely clear that the results of radiotherapy alone in carcinoma of the corpus uteri are commensurable with those of the radical operation. The figures of the clinic therefore confirm the opinion which Heyman formed on his experience with radium treatment in the Stockholm Radiumhemmet:

> "Our figures indicate infallibly that radiotherapy can give just as good results as operation; in view of our results we cannot agree with the almost universal opinion that radiological treatment of carcinoma of the body of the uterus cannot compete with surgical treatment."

Two further points for consideration are: (1) the primary mortality from radiotherapy is 0.3 per cent. as against the 10 per cent. of radical surgery, and (2) all the cases treated radiologically can be brought forward in evidence. These figures justify the treatment of all cases of carcinoma of the uterus by radiotherapy alone, and make it permissible to put a second question: Under what conditions can such results be obtained?

Treatment at Munich

The following remarks are based on the experience and work of the Radiological Institute of the clinic. Dr. Lacassagne, from Paris, is dealing with radium treatment in another paper.

In order to obtain from radiotherapy results such as I have outlined, the following requirements must be fulfilled: (1) adequate means of applying treatment, adapted to modern radiological technique; (2) a system of treatment designed to fulfil its specific purpose; and (3) an administrative mechanism adapted to the needs of the treatment. There are, therefore, three classes of requirements: those connected with technique, with system, and with organization.

Technique, Apparatus, and Personnel

The technical bases of radiotherapy in the clinic are: (1) sufficient quantities of radioactive substances (at least 100 mg. of radium element per case); (2) efficient and modern *x*-ray apparatus; (3) every modern device for exact dosage; and (4) well-trained and reliable personnel. These four requirements must be adequately fulfilled if radiotherapy of uterine carcinoma is to give the results which I have shown it can give. As a member of the Radiological Commission I have had the opportunity of studying this question particularly closely, and have seen that when these conditions are thoroughly fulfilled the results are obtained. The figures of the Institut du Radium and the Radiumhemmet, besides our own, are a proof of this fact.

All cases of uterine carcinoma in the Radiological Institute are treated by a combination of radium and *x* rays. We possess 1,500 mg. of radium element distributed, as in Paris and Stockholm, over a large number of small containers, of which the average capacity is 10 mg.; these can be made up into applicators of any desired shape. We also possess three efficient modern *x*-ray installations with six treatment couches. Some of the tubes are enclosed in high-tension-proof and ray-proof lead casings; others are the modern type of metal-cased tube, with their own protection against leakage of high-tension current and radiations, on a special therapy mounting. The tubes are fed with rectified current from stabilivolt apparatus at a tension of 200 kV and a tube current of 2.5 mA. The patient lies on a special table which can be raised and lowered by an oil pump. She can be put in any desired position relative to the tube, and any desired field can be irradiated with absolute accuracy. It is essential in *x*-ray therapy of uterine carcinoma to give an exact dosage. We are now using recording dosimeters which allow the dose to be read off in *r* units.

It is essential not to underrate the necessity for a reliable personnel. This is an important factor in the success of *x*-ray therapy, because the staff look after the apparatus, read the measuring and recording instruments, and regulate the tubes—are, in fact, in charge of all the factors which ensure that a correct dosage is given.

Therapy According to Plan

Systematic treatment, the second condition for successful radiotherapy, comprises two factors: (1) the compilation of a plan of treatment suitable for the individual case, and (2) the consistent execution of the plan. Nowadays, when a patient is admitted, we lay down the exact lines on which she is to be treated. In its present form this "treatment scheme" embodies the experience of the last eight years, and is an important factor in success. In Munich we use a combination of *x* rays and radium in multiple doses, but in Paris a single dose is given, and the whole treatment is carried out in the shortest possible time. As a rule we give a case of uterine carcinoma two courses of treatment separated by an interval of eight weeks.

Assuming that the clinical evidence is clear, the first treatment is carried out on the following lines:

1st day: Preparatory measures.
2nd day: Preliminary irradiation of the pituitary.
3rd day: *X*-ray treatment, including, when necessary, sensitizing treatment.
4th day: Rest, prolonged over the following days when necessary.
5th day: Diagnostic operative measures.
6th day: Rest, prolonged if necessary.
7th day: Radium treatment.
8th day: Rest, prolonged if necessary.
9th day: Discharge.

When a patient is discharged from the clinic she is handed over again to her family doctor, who is given detailed instructions for her treatment in the interval before she comes back to the clinic, and ensures that the rules laid down for her conduct on discharge shall really be carried out. This treatment is naturally confined to tonic measures, directed to improving her general condition. Eight weeks after the end of the first course of treatment the patient comes back to the clinic for a second course, the scheme of which is as follows:

1st day: Preparatory measures.
2nd day: *X*-ray treatment, including, when necessary, sensitizing treatment.
3rd day: Rest, prolonged if necessary.
4th day: Radium treatment.
5th day: Rest, prolonged if necessary.
6th day: Discharge.

After the second course the patient attends the clinic repeatedly for control and observation. During the first year she comes every two months; during the second year, every three months; and thereafter, every six months. If it is found necessary to give more treatment, a new treatment scheme is drawn up, which includes radium treatment, *x*-ray treatment, or both, according to the needs of the case.

I mentioned in describing the scheme of the first course of treatment that it was carried out in that form when the clinical evidence was clear. The diagnostic operative measures, including scraping and probe excision, are carried out after *x*-ray treatment for the same reasons that preliminary irradiation is given before, and radium treatment after, the radical operation—in order to damage the carcinoma as much as possible and to minimize the risk of spreading the disease by the operative measures.

Routine Irradiation of the Pituitary

The scheme for the first course of treatment includes a preliminary irradiation of the pituitary. This measure is based on the work of Hirsch and Hofbauer. Hirsch considers that it improves the general condition by stimulating the function of one of the members of the endocrine chain, and Hofbauer believes that it increases the sensitivity of the carcinomatous tissue. Since 1923, when Hofbauer put forward this suggestion, we have carried out this preliminary treatment in all our cases of uterine carcinoma. We have seen no untoward effects, and the improvement in the general condition of the patient is very striking. The weight curve, which is an expression of the patient's general condition, follows a characteristic course during radiation treatment quite apart from the effect on the pituitary.

When radiotherapy is successful the weight increases immediately after the treatment; after radical operation the rise is slow and only begins after a long period of convalescence.

Pituitary irradiation is carried out through two fields. These are plotted on each temple in such a position that

the central ray of the beam passes through the sella turcica. The area of the pituitary field is 6 × 8 cm., or 48 sq. cm. The focal skin distance is 30 cm., tension 200 kV, current 2.5 mA, and filtration 1 mm. copper. Each temporal field is given 30 per cent. of an erythema dose, and under these working conditions about 25 per cent. of an erythema dose reaches the pituitary. The pituitary is only irradiated once, during the first course.

X-ray Treatment

If the normal scheme of treatment is being carried out the pituitary irradiation is followed by the *x*-ray treatment. In normal cases this is given by the " large-field " method, in which the whole pelvis is irradiated through a large field on the abdomen and another on the back. In the majority of cases the size of the fields is 10 × 15 cm., or 150 sq. cm. On very fat women it is sometimes enlarged to 15 × 20 cm. (300 sq. cm.), or two contiguous fields are used both anteriorly and posteriorly instead of one, giving an effective area of 20 × 30 cm., or 600 sq. cm. The other working conditions are: 40 to 50 cm. focal skin distance, 200 kV, 2.5 mA, and 1 mm. copper.

Dosage

In 1918 Seitz and Wintz introduced the conception of a " carcinoma dose " into the *x*-ray treatment of carcinoma. This idea opened up a new line in the radiotherapy of uterine carcinoma, because their work showed that success depended upon giving a definite and accurately measured dose, and that the optimum dose was between 90 and 110 per cent. of the " unit skin dose " (H.E.D.) which they laid down as a dosage unit. Their investigations have been confirmed by our experience on this abundant material. It is essential for success that treatment should be carried out with all the necessary technical resources, and that an exact dosage should be given. Our observations and experience show that the carcinoma dose laid down by Seitz and Wintz fourteen years ago—and so hotly disputed—probably needs correction by what I may call histological or biological coefficients, but it is none the less certain that there is an optimum dose for each individual form of uterine carcinoma. As a proof of the validity of this principle, we know that some forms of uterine carcinoma—for example, adenomatous carcinoma of the cervix—do not respond so well to a given dose as others. This is, however, an unsolved problem on which no definite judgement can be passed, and it is outside the scope of this paper. One thing is certain: that the achievement of good results with radiotherapy of uterine carcinoma is a problem of biological physics—that is, it consists in applying to a given part of the body an optimum dose of radiant energy. Döderlein has been an exponent of this belief since radiotherapy was first commenced in 1913, and has recently expressed it with even greater emphasis. Our aim is, therefore, by the application of *x* rays through large fields and by the subsequent radium treatment of the uterus, to give a definite minimal dose of 90 to 110 per cent. of the unit skin dose.

The Erlangen Method of Pure *X*-ray Treatment

Although we hold, as a result of our experience in the clinic, that the combined treatment of uterine carcinoma with *x* rays and radiation is the method of election, chiefly because it offers the greatest facilities for adjusting the dose to the individual, I must touch shortly on treatment by *x* rays alone—more especially as I have headed my paper, " With especial reference to *x*-ray treatment."

The great development and perfecting in Germany of pure *x*-ray treatment was a result of circumstances. During the war Germany was entirely cut off from the outside world, and, owing to the inflation of the mark, was unable to purchase large supplies of radium. Only a few clinics, one of which was our own, possessed adequate quantities of radioactive substances. The pure *x*-ray treatment of carcinoma of the uterus is based on the work of Seitz and Wintz. Both started on the assumption that it was possible by appropriate methods of irradiation to apply to the uterus a dose of *x* rays sufficient to destroy the carcinoma, and from this assumption and their consequent investigations they evolved the " Erlangen " method. Their work was assisted by the development of *x*-ray technique and the improvement in the efficiency of *x*-ray apparatus and tubes.

The fields are irradiated one by one in such a direction that the beams cross at the uterus; the sum of the energy supplied by the six applications gives the required minimal dose of 90 to 110 per cent. of the unit skin dose.

The successes achieved by Wintz at the Erlangen clinic show that this method, a product of the abnormal conditions of its time, can give excellent results if properly carried out. The absolute five-year cure rate for cases of cancer of the cervix treated during the years 1915–26 was 19.5 per cent.; for those treated in the years 1921–6 it was 20.9 per cent. These results are comparable with those we have obtained by our combined treatment. For carcinoma of the body his absolute cure rate for the years 1915–26 is 42.7 per cent., and for the years 1921–6 it is 50.5 per cent. These figures are also about the same as ours.

These are the results obtainable with pure *x*-ray treatment, but to achieve them it is naturally essential that the technique of treatment should be thoroughly learnt and carefully carried out.

Diagnostic Operative Measures

These measures include excision and scraping. From every case of uterine carcinoma we take a specimen for microscopical examination in order that the clinical diagnosis of carcinoma may be confirmed histologically, and in order to prove after cure that the disease really was a carcinoma. Another measure carried out after *x*-ray treatment is fulguration and coagulation with the high-frequency current. This is especially valuable as an auxiliary method of treatment in cauliflower carcinomata of the portio vaginalis, and in infiltrating medullary carcinoma; their object is to intensify the local action of the rays. We have never seen any untoward results from them, although the crater in the cauliflower carcinoma of the portio vaginalis is sometimes very deep. On the contrary, the rapidity with which the destroyed tissue is replaced is a constant source of surprise. At the beginning we only employed this treatment in bad cases, but the good results we obtained have induced us during the last few years to carry it out in borderline and operable cases also. We propose to make even more extensive use of it in the future, for we believe that its effect on the deep tissues gives considerable assistance to radiotherapeutic measures.

Radium Treatment

Treatment with radium is carried out two days after the diagnostic operative measures. As Dr. Lacassagne is dealing with this subject very thoroughly in his paper, I will not discuss it here. I will just mention that our method is designed to fit into our general scheme of treatment. We give the vaginal, cervical, or intrauterine applications twice, once in each course of treatment. Each application consists on the average of 55 mg. radium element, and the radium is left in place for twenty-four hours. The filtration is through 1 mm. of brass. For carcinoma of the cervix we use vaginal and cervical applicators, and for carcinoma of the body intrauterine applicators. For vaginal application we use disk-shaped

containers embedded in a cork carrier. The vaginal and intracervical applications necessary in carcinomata of the portio vaginalis are carried out at the same time, occasionally on two consecutive days. The second course, which also includes *x*-ray and radium treatment, is carried out after an interval of eight weeks. The irradiation is again calculated to provide a minimal dose of 90 to 110 per cent. of the unit skin dose.

Results of the Scheme

This, generally speaking, concludes the scheme of treatment in carcinoma of the uterus. Further treatment is only carried out when special circumstances make it necessary, and an interval of twelve weeks is allowed from the end of the second course. We lay great stress on the necessity for the patient herself to co-operate in the scheme we lay down, and we enlist the help of the doctor who has sent her to the clinic.

Our records show that, if the scheme is consistently carried out, the cure rate in Group 1 (operable) can be raised from 49 to 58 per cent., and in Group 2 (borderline) from 23 to 29 per cent. The reason is that many patients, a few weeks after the end of the first course, feel "well" and do not come back for the second; accordingly, when they do come back, their condition is much worse and the prospects of a cure are diminished. There is, however, another and greater reason why the figures are not as high as they might be, and that is the abnormal economic conditions from which Germany is suffering at the present moment. Many patients are quite unable for purely financial reasons to come back to the clinic for the second course.

Administration: After-care: Record-keeping

The essential administrative requirements are: (1) regular execution of treatment and subsequent examination, and the education of the patient to regularity; (2) suitable provision for controlling regular treatment and subsequent observation; (3) careful statistical record and control of all clinical materal. These administrative requirements are just as important as those of technique and system, and if they are fulfilled exactly the work is much facilitated. They make possible a systematic control of the clinical material, and thus contribute markedly to success.

I have already spoken of the importance of regularity in treatment, and how it contributes to the results. Regularity in after-observation is equally important in order to detect recurrence and ensure that fresh treatment is carried out in good time. I have also remarked on the necessity of educating the patient to conform to this regularity. It so often happens that, when a patient's subjective distress and haemorrhage cease, she regards her instructions as an unnecessary compulsion imposed for purely scientific reasons. On account of this I think it is not out of place to say a word or two about the administrative measures by which we achieve this regularity, which is necessary purely in the interests of the patient, and which has certainly contributed to the improvement of our results.

Follow-up Measures

Every new patient receives, at the conclusion of the first course of treatment, a treatment card showing her name, index number, date of treatment, the date on which she is to return for her second course, and the dates on which she should present herself for subsequent observation. They serve the double purpose of informing the doctor of the arrangements and of impressing upon the patient the necessity for keeping exactly to her appointments. At the same time each patient is given a leaflet setting out all her rules for conduct. We have recently had to enlarge and tighten it up, for we have often known doctors, in the interval between the two courses of after-treatment, disregard instructions to the great danger of the patient.

The clinical material is kept under permanent control by means of a special chronological card index. This is necessary to ensure good results and the sound development of therapeutic methods, and serves as a check on whether patients have actually carried out their instructions. If a patient, in spite of every warning, does not appear on the appointed day for further treatment or observation, a letter is written to her warning her that it is absolutely essential to keep to her times. If a patient fails to reply to two of these warnings, which are accompanied by a stamped addressed envelope, or if the letter is returned through the dead letter office, inquiries are made through the local authorities to discover whether the patient has gone away, and, if so, where. If she has died, we ask for the date and cause of death. We have now carried out these follow-up measures for some years, and have succeeded in establishing a permanent control and also in improving our figures. The number of patients failing to attend or who are lost sight of is very much smaller nowadays than it used to be. The chief difficulties, which affect many patients, are to be found in the economic and social conditions of the times.

Administrative measures include the keeping of an accurate statistical record. Statistics of the magnitude of those I have brought forward can only be compiled and are only of value if absolutely reliable data of every case are available. In addition to the history sheets, which are carefully filled up and contain all the necessary details of the disease and treatment, we use a statistical card index of our own design, with a system of subdivision according to the site of the growth and by years. Every patient has her own card, and the details of every patient are filled in in alphabetical order. In this way we can maintain continuous supervision over the whole of our material, keep constantly up to date, and produce statistics of scientific value.

Can Radiotherapy be Improved?

I will end my paper by putting a third question: Has the radiotherapy of uterine carcinoma reached the limits of its effectiveness, or is it possible to improve our results still further? This question is of practical importance to-day. The improvement of the efficacy of radiotherapy rests on two important groups of factors—direct and indirect.

The direct factors include all measures, mediate and immediate, for increasing the sensitivity of the growth to radiation. It is known that certain histological forms of uterine carcinoma, such as carcinoma adenomatosum of the cervix, seem to be less sensitive to radiation than others. The treatment of these includes all attempts to compensate for their lesser sensitivity by the local application of sensitizing media, including all local methods of reinforcing the radiotherapy—for example, fulguration and electrocoagulation.

The indirect factors include public and scientific propoganda to secure the early diagnosis of uterine carcinoma, and thereby to improve the quality of the clinical material. They also include the administrative measures which I have described, and every kind of auxiliary treatment directed towards improving the patient's general condition and counteracting the strain which any radiation treatment must impose on it. This is the object of the after-treatment. The improvement of the quality of the material seems to us to offer the best prospects of improving the results of radiotherapy.

It is the experience of every exponent of radiotherapy, which he can confirm every day, that the patients who come to him to be treated for carcinoma of the uterus are extraordinarily bad material. This is borne out by our own figures: out of 1,723 cases of carcinoma of the cervix only 326, or 18.8 per cent., fell into Group 1 (operable). The reason is not that radiotherapists assess their material by a more exacting standard than surgeons, but that the large radiotherapeutic institutions admit all the cases that have been given up at a glance as hopeless subjects for operation or any other kind of treatment.

The figures of operability for the patients treated by radiotherapy for carcinoma of the cervix fluctuate between 15 and 28 per cent. In contrast to these, clinics which still practise operation give figures of 40 to 80 per cent., and for carcinoma of the body of the uterus as high as 100 per cent. The handicap which these low operability figures impose on radiotherapy can be illustrated by a simple calculation from our figures. If 40 per cent. of our material were operable the absolute cure rate by radiotherapy would be raised from 24 to 30 per cent., and if 60 per cent. of the material were operable it would be raised to 40 per cent. The way to improve the material is suggested by one of the directions which Regaud has put forward for the work of the Radiological Commission:

"The encouragement of public and scientific propaganda directed towards the early recognition of carcinoma, so that early and effective treatment may be carried out."

Conclusion

I have endeavoured to explain within the scope of my paper: (1) what radiotherapy of uterine carcinoma, unassisted by surgery, can do nowadays; (2) the conditions of technique, system, and administration under which these results can be achieved; and (3) the prospects, according to our experience up to date, of improving our results. The figures show unequivocally that radiotherapy can do all that operation can and more, in that it can cure inoperable cases. Moreover, they prove the truth of Döderlein's words:

"I have long maintained that the day of the dangerous and drastic radical operation is over."

Success depends, however, on possessing the proper means and using them in the proper way.

RESULTS OF THE TREATMENT OF CANCER OF THE CERVIX UTERI*

BY

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The subject with which I have to deal consists of certain data concerning the results which may reasonably be expected nowadays from the radium treatment of cancer of the uterus. Since I have the honour of addressing you as representative of the Institut du Radium de Paris, you will perhaps excuse me if I confine myself in this short survey exclusively to the statistics of the therapeutic section of that institution, of which Dr. Regaud is the head. We consider that, in practice at least, the epitheliomata of the corpus and the sarcomata of the uterus belong to the domain of surgery, while the epitheliomata of the cervix are for the most part the province of radiotherapy; it is with this class of cancers alone that I am concerned to-day.

Table I shows the total number of patients treated at the Institut du Radium de Paris by the staff of the Fondation Curie by radiotherapy, either alone or in combination with other treatment, between the years 1919 and 1926. They numbered 678, of whom 182 (26 per cent.) were alive and free from all symptoms of cancer five years after the date of treatment. The percentage of cures varies, however, from year to year, suggesting a constant improvement which is chiefly to be explained by the regular progress that has been achieved in radiotherapeutic technique.

Advances in Technique

From the point of view of technique, the eight years under review fall into three distinct periods. The first, which comprises the years 1919 and 1920, just after the treatment department of the Institut Curie was opened, was a period of initiation and testing out of the medical personnel. Cervical cancers were irradiated with material that was not properly adapted to its purpose, and by diverse methods which subsequent experience has led us to regard as defective. The results were frankly bad: 10 and 17 per cent. only of cures. In 1921 we instituted our technique of introducing radium into the uterine cavity, and have not appreciably modified it since; it is still given systematically in every case. It consists in the introduction into the uterus of a sound containing tubes of radium placed end to end in sufficient number to fill up the whole length of the uterine canal; an arrangement is employed in the vagina by which tubes are held round the cervix. The tubes used number from five to eight, have a wall thickness of 1 or 1.5 mm. of platinum, and contain a total quantity of about 60 to 70 mg. of radium element: the total dosage from a continuous application lasting five or six days rarely exceeds 8,000 mg.-hours. Nearly all the cases treated in 1921, 1922, and 1923 received this intrauterine treatment alone. Though inadequate, it was correct, and its merits are apparent in the increase in the rate of cure first to 25 per cent. and then to 30 per cent.

The staff then became convinced of the necessity of reinforcing the treatment by external irradiation, exerting

TABLE I.—*Comprehensive Statistics of Cases treated by Radiotherapy (alone or combined) Compiled at the End of the Fifth Year after Treatment*

Years	Total Number of Patients Treated	Patients Not Cured or Considered as Such				Patients found Cured at the End of the Fifth Year	Percentage of Cures
		Dead from Cancer or with Recurrence	Dead from Intercurrent Disease	Lost Sight of	Total		
1919	103	85	2	5	92	11	10
1920	98	78	1	2	81	17	17
1921	48	35	1	—	36	12	25
1922	69	50	1	—	51	18	26
1923	85	55	—	4	59	26	30
1924	80	48	3	1	52	28	35
1925	97	60	3	—	63	34	35
1926	98	56	4	2	62	36	36
Totals	678	—	—	—	496	182	Mean of cures 26%

* Translation of a paper read in opening a discussion in the Section of Obstetrics and Gynaecology at the Centenary Meeting of the British Medical Association, London, 1932.

as uniform an effect as possible over the whole of the pelvic cavity. From 1924 onwards this combined treatment has tended to become the rule in cases which showed a malignant invasion of the parametrium. The external irradiation of the pelvis is carried out either by means of *x* rays or by means of a powerful radioactive source situated 10 cm. from the skin and consisting of 4 grams of radium element (a quantity which it is hoped will soon be increased), the radiations from which are applied through several fields. This amelioration in technique has resulted in a fresh improvement in the percentage of five-year cures to 35 and 36 per cent. Table II shows better than this verbal account the progress that has been made in the radiotherapy of cancer of the cervix in the course of the last few years. It contains only those cases treated by radiotherapy alone, and excludes all those who underwent operation—for instance, cases of post-operative relapse, cases treated by combined radium and surgery, and hysterectomies carried out after radiotherapy. The cases are classified according to the progress which the disease had made.* The period of eight years has been divided into two four-year periods, each comprising an approximately equal number of cases. This arrangement allows the five-year results of the two periods 1919–22 and 1923–6 to be compared. The cure rate over the whole period in a total number of 588 reached 26 per cent., but as the rate for 271 patients treated from 1919 to 1922 was 17 per cent., that for 317 patients treated between 1923 and 1926 inclusive was 33 per cent.

TABLE II.—*Statistics, according to the Stage of Extension of the Lesions of Cases treated by Radiotherapy Alone, Compiled at the End of the Fifth Year after Treatment*

Years	Number of Patients Treated	Stage I		Stage II		Stage III		Stage IV		Total of Patients Cured	Percentage of Cures
		Irradiated	Cured	Irradiated	Cured	Irradiated	Cured	Irradiated	Cured		
1919	83	4	2	23	5	38	2	18	0	9	10
1920	89	12	3	36	8	38	3	3	0	14	15
1921	36	7	1	20	6	8	0	1	0	7	19
1922	63	7	4	25	9	27	4	4	0	17	26
1919–22	271	30	10 = 33%	104	28 = 26%	111	9 = 8%	26	0	47 = 17%	
1923	74	7	6	25	10	37	7	5	0	23	31
1924	68	3	3	19	9	36	12	10	0	24	35
1925	88	8	6	25	7	38	15	17	1	29	32
1926	87	4	4	27	15	41	12	16	0	31	35
1923–6	317	22	19 = 86%	96	41 = 42%	152	46 = 30%	47	1	107 = 33%	
Totals ...	588	52	29	200	69	263	55	73	1	154	—
Percentages	—	55		34		20		1			26

ANALYSIS OF RESULTS

I propose to consider the comparative results for the two four-year periods, and to analyse each one separately according to the various stages of the disease. In Stage I the total number of cases was fifty-two. In thirty cases treated during the first period ten cures were obtained (33 per cent.); but of twenty-two patients irradiated during the second period nineteen were still well after five years (86 per cent.). The number of cases in Stage II was 200; the 104 treated in the first period gave twenty-eight cures (26 per cent.); the ninety-six treated in the second period gave forty-one cures (42 per cent.). The Stage III cases give a still more striking proof of progress: whereas only nine patients (8 per cent.) of 111 were cured from 1919 to 1922, the number cured out of 152 treated between 1923 and 1926 was forty-six (30 per cent.). In Stage IV, on the other hand, the growths were practically incurable, which is not surprising to anyone who knows the extent of the lesions in this stage; they really belong to the category which the Americans term "desolated cases."

These are the results which radium therapy of cancer of the cervix was giving five years ago, with the methods and the knowledge that were at our disposal then. There is every ground for thinking that the cure rate will be still further improved, though possibly not with quite such rapidity.

THE PROBLEMS OF RADIUM THERAPY

The principal obstacles to the radium therapy of cervical cancer are known, and the staff are considering the lines along which to work in order to gain still further control over the disease.

(*a*) Many women suffering from Stage III lesions receive only temporary benefit from distant radium therapy by means of the 4-gram bomb. After some months recurrence shows itself in the pelvic glands, as a proof that the quantity of radiation that has penetrated to the deeper tissues is insufficient. It is permissible to hope that more patients will be permanently cured when the institute has its 8-gram bomb, for use at greater distances from the skin than 10 cm.; the new bomb is to be placed at its disposal in a short time.

(*b*) The immediate mortality from gynaecological radium therapy is due entirely to infection and hardly amounts to 2 per cent. In a much greater proportion of cases, however, the irradiation sets on foot infective processes which interfere with treatment and necessitate its interruption for a time, which may be short or long. When uterine cancers become heavily infected, radium treatment, and consequently cure, is sometimes impossible. The most frequent causative organism in these complications is the streptococcus, against which the bacteriologists have not yet provided the gynaecologists with an efficient weapon. If they could find an adequate antidote, one of its most useful effects would be to increase considerably the proportion of cures in uterine cancer.

(*c*) Too many of the patients who come for advice for the first time are already suffering from Stage IV lesions, which are beyond the scope of therapy. In our statistics these cases number more than 12 per cent., and this figure should really be increased by a certain number of cases, not shown in the statistics, whose lesions are so extensive that they contraindicate any attempt at treatment. The efforts which are being made in all countries to bring cancer under treatment earlier must inevitably reduce the numbers of these unhappy women.

We have, therefore, good reason to hope that the radium therapy of uterine cancer will make still further progress. One may prophesy that before long epithelioma of the cervix will be diagnosed earlier and irradiated correctly, and that it will cease to be an important factor in the tables of mortality from cancer.

* The state of the disease, for statistical purposes, was established by the rules laid down by the Section of Hygiene of the League of Nations

SURGICAL TREATMENT OF CARCINOMA OF THE CERVIX*

BY

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I propose to confine my remarks to the results I have obtained by Wertheim's operation. I shall not touch upon the technique of the procedure, for those interested in the subject will find it fully discussed in two recent publications of mine to which I would refer them.[1 2]

Results on Basis of Five Years' Freedom from Recurrence

Between May, 1907, and May, 1927, I performed the operation 339 times. The results are as follows:

Died of the operation	52
Lost sight of before 5 years	11
Died other disease before 5 years	9
Died recurrence before 5 years	135
Well 5 years after operation	132
	339

The operative mortality rate is 15.3 per cent. The relative cure rate is 38.9 per cent., or, deducting the twenty cases that were lost sight of or died of other disease before five years, 41.3 per cent.

Glandular Invasion.—Of the 339 cases malignant invasion of the regional glands was present in 143 (42 per cent.). The following table gives the results obtained from this group.

Regional Glands Invaded

Died of the operation	31
Lost sight of before 5 years	5
Died other disease before 5 years	2
Died recurrence before 5 years	71
Well 5 years after operation	34
	143

These figures contrast markedly with those obtained from the group of cases in which the regional glands were not involved.

Regional Glands Not Invaded

Died of the operation	21
Lost sight of before 5 years	6
Died other disease before 5 years	7
Died recurrence before 5 years	64
Well 5 years after operation	98
	196

It will be noted that in the gland-invaded group the operative death rate is 21.6 per cent., whilst in the non-invaded group it is only 10.7 per cent. Further, the relative cure rate of the gland-invaded group is only 23.7 per cent., or, with deductions, 24.6 per cent. as against 50 per cent., or, with deductions, 53.5 per cent. in the non-invaded group. The presence of growth in the regional glands about halves the chance of cure.

Absolute Five-Year Cure Rate.—I reckon my operability rate at 63 per cent. The 339 cases tabulated may therefore be regarded as a selection out of 538 cases originally presenting themselves for treatment. The absolute cure rate is thus 24.5 per cent., or, with deductions, 25.4 per cent.

Results on Basis of Ten Years' Freedom from Recurrence

My experience shows that five years' freedom from recurrence is only a 90 per cent. cure, for about 10 per cent. of all recurrences take place between the fifth and tenth years after the operation. From 1907 up to May, 1922, I had performed the operation 227 times. The results are as follows:

Died of operation	37
Lost sight of before 10 years	18
Died other disease before 10 years	11
Died recurrence before 10 years	92
Well 10 years after operation	69
	227

The operative death rate is 16.3 per cent. This is higher than that in the comparable table in the five-year statistics because my operative mortality was higher in my earlier years. The relative cure rate is 30.3 per cent., or, deducting the twenty-nine cases lost sight of or died of other disease, 34.8 per cent.

Glandular Invasion.—Of the 227 cases malignant invasion of the regional glands was present in 93, or 40.9 per cent. The following table gives the results obtained from this group:

Regional Glands Invaded

Died of operation	21
Lost sight of before 10 years	4
Died other disease before 10 years	2
Died recurrence before 10 years	46
Well 10 years after operation	20
	93

In contrast to these figures the next table shows the results obtained from the group of 134 cases in which the regional glands were not invaded:

Regional Glands Not Invaded

Died of operation	16
Lost sight of before 10 years	14
Died other disease before 10 years	9
Died recurrence before 10 years	46
Well 10 years after operation	49
	134

As in the five-year statistics so in the ten-year—the operative death rate of the gland-invaded group is much higher than that of the non-invaded (22.5 per cent. as against 11.9 per cent.). The relative cure rates also are very different—21.5 per cent., or, with deductions, 22.7 per cent., as against 36.5 per cent., or, with deductions, 44.1 per cent. This again shows how very markedly the chances of cure are lessened if the regional glands are malignant.

Absolute Ten-Year Cure Rate.—Reckoning my operability rate as 63 per cent., the 227 cases dealt with on the ten-year basis may be regarded as a selection out of 360 cases originally presenting themselves for treatment. The absolute cure rate is therefore 19.1 per cent., or, with deductions, 20.8 per cent.

Private Cases

When Comyns Berkeley and I began to do the operation in 1907 no one else in our circle was performing it, nor had radium made its appearance on the scene, so that we had the free run of the out-patient departments both at Middlesex Hospital and at Chelsea Hospital for Women, and there was no difficulty in keeping an accurate count of all the cases seen by us. In the years 1907-11 112 cases were presented to us, and out of these we operated on seventy, or 63 per cent. After 1911 it became increasingly difficult to keep such a count, because not only had our colleagues begun to do the operation, but I had been translated from the out-patient department, whilst Middlesex Hospital (to which, on account of its incurable cancer wards, an undue proportion of advanced cases had always been sent) became known as a radium centre, and the number of these cases became so increased

* Read in opening a discussion in the Section of Obstetrics and Gynaecology at the Centenary Meeting of the British Medical Association, London, 1932.

that the patients presenting themselves there no longer constituted a fair sample of the cases of carcinoma of the cervix in the community at large. We therefore gave up the futile task, and in all our subsequent communications continued to reckon our operability rate at 63 per cent.

There is, however, one group of cases wherein I can with perfect accuracy give the proportion on which I operated—namely, those whom I saw for the first time in my consulting room in private practice.

Between 1910 and May, 1927, I saw at my house 133 women suffering from carcinoma of the cervix, and of this number I operated on 109, or 82 per cent. The results obtained are as follows:

Patients Seen Privately

Died of operation	10
Lost sight of before 5 years	2
Died other disease before 5 years	1
Died recurrence before 5 years	51
Well 5 years after operation	45
	109

The operative death rate of this group of cases is 9.1 per cent., the relative cure rate (without deductions) 41.2 per cent., and the absolute cure rate 33.8 per cent. It may be argued that this group represents a number of specially picked cases in whom the average advancement of the disease was less than ordinary. The gland involvement rate does not support this suggestion, for of the 109 cases the regional glands were malignant in 41, or 40 per cent., which is only fractionally below the general average. The lower operative mortality is due to the fact that these women, owing to their better social and financial position, were in a less deteriorated state of health than the average patient.

Death Rate of the Operation

The operative mortality of Wertheim's operation in the past was, and often still is, held up as a reproach against it, although for many years now my death rate has been no greater or less than that of certain other operative procedures the performance of which excites no criticism. I have succeeded in diminishing it to a figure which is considerably below that of prostatectomy. Between 1907 and the end of last year I had performed the operation 428 times, and the following table shows how the operative death rate has fallen:

First	100	operations,	20	operative deaths:	20 per cent.
Second	100	,,	13	,, ,,	13 ,,
Third	100	,,	16	,, ,,	16 ,,
Last	128	,,	12	,, ,,	9 ,,

Conclusion

According to approved custom I have carried my percentages into decimals, but such meticulousness has little real value, for the figures dealt with are far too small to be beyond the vagaries of chance. A run of good luck puts them up a cipher or two, a run of bad luck puts them down. We can better express the utility of the operation by saying that by its means we can cure (meaning by that term survival for five years) two out of every five patients operated on and one out of every four patients seen.

If we go further and desire to use the term "cure" in its complete sense, we must frame our statement on the ten-year basis, and say that the operation cures one out of every five patients seen and one out of every three patients operated on.

This general statement applies not merely to my own figures, but also to the results published by those other surgeons who have performed the operation on a large scale and kept count of their patients' after-histories Moreover, it is a fixed result incapable of material improvement unless the average period elapsing between the incidence of the disease and the time when the patient presents herself can be shortened—which seems to me very unlikely. It might be thought that the marked reduction in operative mortality would be reflected in the end-results, but it is to be remembered that the bulk of the patients dying as the result of the operation are in an advanced stage of the disease, so that of those who now escape operative death only a small proportion escape death by recurrence. Finally, I would emphasize that the cures effected by the operation are obtained from only a proportion of the cases seen by the surgeon. Besides those he selects for operation, a considerable surplus remains out of every hundred seen by him. These inoperable cases are treated by radiation. As a group they are in an advanced stage of the disease, but, nevertheless, a certain small proportion can be salved by these means, and this number must be added to the number of operative cures when estimating the total achievement.

References

[1] *Lancet*, February 8th, 1930, p. 277.

[2] *Australian and New Zealand Journ. of Surgery*, June, 1931.

B. DIPHTHERIAE, GRAVIS AND MITIS

BY

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Anderson, Happold, McLeod, and Thomson, in 1931, described two forms of diphtheria bacilli, *gravis* and *mitis*, the former being associated with the severest cases of diphtheria with a characteristic clinical picture and a high death rate, the latter with milder attacks and a lower death rate. The main bacteriological characteristics of *gravis*, *mitis*, and *intermediate* forms were as follows:

Gravis ferments starch and glycogen; pellicle and granular deposit in broth; grey or grey-black colony on chocolate tellurite medium.

Mitis does not ferment starch or glycogen; uniform turbidity in broth; black colony (often partial inhibition of growth) on chocolate tellurite.

Intermediate does not ferment starch or glycogen; granular growth in broth.

Twelve strains which Professor McLeod kindly sent us behaved culturally in our hands exactly as he described; nine were typical *gravis* and three typical *mitis*.

Immunological Experiments

Our first interest was in the immunological implications, for the suggestion arose from this work that the ordinary therapeutic antitoxin was relatively ineffective against infection with the *gravis* bacillus. In order to investigate this point we carried out animal experiments with "typical" *gravis* and *mitis* strains, which were either sent to us by Professor McLeod or isolated by ourselves.

Response to Antitoxin

Gravis and *mitis* strains were injected subcutaneously into groups of guinea-pigs, each guinea-pig receiving 60,000 million bacilli. After various intervals, twenty

units of ordinary therapeutic antitoxin (made from Park-Williams 8 bacillus) were injected intracardially (Table I): 112 animals were used.

TABLE I.—*Effect of Ordinary Therapeutic Antitoxin (Intracardiac) on Guinea-pigs Previously Infected (Subcutaneously) with Gravis and Mitis Strains.*

Type	Hours Elapsing before Antitoxin given			
	2	4	6	8
Gravis	0/8	4/20	9/14	17/17
Mitis	0/5	5/20	6/14	14/14

Numerator = Number of guinea-pigs died.
Denominator = Number of guinea-pigs injected.

Thirty-four animals which had been infected with *gravis* strains received antitoxin four to six hours afterwards; thirteen died. In the corresponding *mitis* group eleven died. Park 8 antitoxin is apparently as effective in the treatment of *gravis* as of *mitis* infection in the guinea-pig.

Schick-negative Animals and Gravis Infection

If Park-Williams 8 antitoxin were ineffective against infection with *gravis*, as suggested, human beings immunized with the usual prophylactics made from the Park-Williams 8 bacillus would have in their blood only Park-Williams 8 antitoxin. Schick-negative individuals might therefore be unprotected against attack by *gravis* cultures. On this supposition the rare cases of "mild or modified diphtheria" in Schick-negative subjects would be predominantly or solely *gravis*.

We took sixty-one guinea-pigs which had been immunized by Mr. Glenny with T.A.M., T.A.F., or formol-toxoid, all prepared with the Park-Williams 8 strain. All the guinea-pigs were Schick-negative, some being ouly slightly above the Schick-negative level. Into these sixty-one animals thirty-four strains of *gravis* bacillus (dosage —60,000 million organisms subcutaneously) were injected, six of the strains being from McLeod's own collection; fifty-nine of the guinea-pigs lived, and two died. (Presumably the two which died were just above the Schick-negative line and possessed a low immunity, insufficient to protect against the assault of many millions of bacilli injected subcutaneously.) The strains which killed these two guinea-pigs were thereupon each injected into six further Schick-negative cavies: all twelve animals lived. It was therefore reasonable to conclude that animals fully immunized with Park-Williams 8 prophylactics were immune against attack by *gravis*.

Virulence of Gravis and Mitis Forms

Quantitative subcutaneous tests in guinea-pigs have shown that the *gravis* type is not more virulent than the *mitis* (Table II).

TABLE II

Type	Number of Bacilli Injected in Millions				
	3,000	2,000	1,000	500	250
Gravis...	6/6	11/14	7/12	4/12	1/9
Mitis	4/4	19/21	16/20	11/20	1/9

Numerator = Number of guinea-pigs died.
Denominator = Number of guinea-pigs injected.

Since McLeod had also used rabbits for his experiments we injected groups of rabbits subcutaneously and intravenously with various doses of *gravis* and *mitis* organisms. Sixty-four animals were used, and the mortality in the *gravis* group (thirty-two injected: nineteen died) was definitely lower than in the *mitis* (thirty-two injected: twenty-six died).

The above experiments in guinea-pigs and rabbits show that the virulence of *gravis* is certainly not greater than that of *mitis*. Quantitative intracutaneous tests in thirty-two guinea-pigs also failed to show any significant difference in virulence between *gravis* and *mitis* strains. If anything, the more severe lesions were caused by *mitis* strains.

Potency of Gravis and Mitis Toxins

Does the *gravis* type produce more potent toxin in laboratory media than the *mitis*? We are indebted to our colleague Mr. C. G. Pope for testing this point. Using several media, including one which had recently given the unprecedentedly high value of 60 Lf. for diphtheria toxin, he examined nine *gravis* and six *mitis* strains. With the latter he made toxins from 16 to 20 Lf. in value: the *gravis* strains mostly yielded toxins of 2 to 4 Lf. (with one strain, toxin of 6 Lf. value was obtained). Apparently some *mitis* strains are much more potent producers of toxin in laboratory media than *gravis*.

Severity of Infection and Type

Is *gravis* associated conspicuously with severe and *mitis* with mild infections? Obviously a satisfactory answer will call for the collection of large numbers of figures over a long period. We are indebted to various clinicians in fifteen areas in the British Isles and four cities abroad for sending us cultures. In the following list the first figure indicates the number of swabs, and the second the percentage showing *gravis* type: Cork, 14–90; Ipswich, 10–90; Frankfort, 6–80; Hull, 106–60; various English towns, 48–60; Budapest, 10–40; Bristol, 20–30; Prague, 11–30; London, 53–29; Scotland, 37–15; Copenhagen, 20–0. (We accepted the ability to ferment starch and the formation of pellicle with granular deposit in broth as the criteria of *gravis* strains, even where the other characteristics were not completely typical.) Statistically these figures are of slight value, for from some areas we received cultures only from severe cases, whereas from other areas we received cultures from every case of frank diphtheria. The figures at most indicate that the *gravis* type occurs in many areas.

Of 235 strains so far examined, for which the clinical data were available, 76 were *gravis*, 116 *mitis*, and 43 *intermediate*. The 192 cases from which *gravis* or *mitis* organisms were isolated were grouped in accordance with the severity of the infection: twenty-one mild cases, 52 per cent. *gravis*; thirty-three moderate cases, 27 per cent. *gravis*; eighty-seven severe cases, 40 per cent. *gravis*; fifty-one very severe cases, 55 per cent. *gravis*. Very severe cases were therefore not associated with a significantly higher percentage of *gravis* strains than were mild cases.

In 167 cases we obtained data as to the patient's recovery or death. Seventy-nine cultures were classified as *gravis* with twenty-eight deaths (a mortality of 35 per cent.); eighty-eight cultures were classified as *mitis* with twenty-seven deaths (a mortality of 30 per cent.). The death rate in both groups, while not significantly different, is high, since at this stage of the investigation we had asked for cultures only from severe or fatal cases. The point of outstanding interest is that, while Anderson and his colleagues had no deaths in ninety-one *mitis* infections in the Leeds area, our results show that some *mitis* infections from other areas were fatal.

DIFFICULTIES IN CLASSIFICATION

It should be mentioned that we found an arbitrary classification of our cultures in some instances difficult. In our whole inquiry we received 347 strains. Of these, 152 fermented starch and glycogen (*gravis*), but in broth only 124 gave

the typical *gravis* pellicle and granular deposit, while 28 showed uniform turbidity, and therefore resembled *mitis*. In 195 strains there was failure to ferment starch and glycogen (*mitis*), but in broth only 118 gave the typical *mitis* appearance, 14 showed pellicle and deposit, while 63 gave a deposit but no pellicle. We also observed colony differences on McLeod's chocolate tellurite medium which do not conform to the Leeds classification.

Our feeling is, therefore, that one can by refinement of methods and readings make a number of groups shading from the typical *gravis* at one end to the typical *mitis* at the other, but so far as we can judge from our limited experience the majority of strains are nearer the two ends of the scale, and can be classified as *gravis* or *mitis*.

Discussion and Summary

The interesting distribution of *gravis*, *mitis*, and *intermediate* types, and their association with the varying severity of attacks of diphtheria, call for the examination of large numbers of serial cases in different areas.

From the work of Anderson and his co-workers in Leeds the following suggestions have arisen: (*a*) that the *gravis* type is mainly, or even solely, associated with severe forms of diphtheria; (*b*) that the *mitis* type causes only mild attacks; (*c*) that attacks caused by *gravis* strains respond less satisfactorily to the ordinary therapeutic serum prepared from the Park-Williams 8 bacillus, and that a special antitoxin is called for. Suggestions (*a*) and (*b*) appear to be true for the Leeds area, but on our data are not applicable to the country generally.

Our results, which are at variance with the suggestions arising out of the Leeds work, may be summarized as follows:

1. If *gravis* and *mitis* cultures are injected into groups of guinea-pigs the two groups can be saved with equal readiness by Park 8 antitoxin given some hours later.

2. Guinea-pigs immunized with prophylactic mixtures which are in current use for human immunization in England and which are prepared from the Park 8 strain survive the injection of large doses of *gravis* cultures.

3. *Mitis* strains are at least as virulent to guinea-pigs and rabbits as *gravis*. Subcutaneous, intracutaneous, and intravenous methods were employed.

4. *Mitis* strains have produced much better toxins than *gravis* under the conditions in which diphtheria toxin is usually produced in laboratories.

5. There is no satisfactory evidence that the gravest types of diphtheria are generally associated solely or even mainly with the *gravis* type of bacillus.

6. It is possible, by the use of the methods described by Anderson and his colleagues, to select a number of groups of bacilli intermediate in character between typical *gravis* and *mitis*.

The interesting association of the *gravis* bacillus with severe attacks of diphtheria found in the Leeds area is a local phenomenon. Since the implications of the term "*gravis*" do not seem to have been substantiated by further inquiry, we would suggest that the name *gravis* be withdrawn in favour of some non-committal title such as "starch-fermenting type."

Bibliography

Anderson, J. S., Happold, F. C., McLeod, J. W., and Thomson, J. G.: *Journ. Path. and Bact.*, 1931, xxxiv, 667.
Anderson, J. S.: *Public Health*, 1932, xlv, 198.

BACTERIA ON FRUIT

BY

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One of the most often iterated of slogans, in these days of slogans, is "Eat more fruit." We are exhorted to eat fruit for many reasons—for their vitamin content, for their valuable mineral constituents, and because the indigestible part (usually referred to as ballast) acts as a gentle stimulant to the intestinal tract. Some fruits, again, such as bananas, dates, figs, and so on, which are known as food fruits, are recommended for their nutritive properties. So far as I have seen, however, the public attention in this country is never drawn to the fact that raw fruit is rife with micro-organisms. While I am of the opinion that this omission is reprehensible, it is perhaps too much to expect the advocates of a fruit diet to say anything that might seem to detract from their advice.

In a recent authoritative publication[1] there occurs the statement, "Bacteria, moulds, and yeasts are common on the surface of fruit." No hint is given as to the nature of these bacteria, and one becomes curious as to what they are. Hoder[2] has carried out a series of examinations on different fruits obtained in the market and from street traders in Prague. The object of his investigations was to estimate the bacterial content of fruit and to show the great diminution that takes place after washing the fruit. The fruit was washed three times in normal saline and plates inoculated from each washing. The result was an enormous count from the first washing, a marked diminution from the second, and a further decrease from the third. To give an example. from three cherries after the first washing the count was 26,000, after the second 700, and after the third 3. He proceeded to carry out a similar experiment, using water instead of saline. Again there was a spectacular decrease in the bacterial count between the first and second washings. As to the organisms present, he mentions the occurrence of *B. proteus*, *B. coli*, *B. subtilis*, staphylococci, streptococci, sarcinae, yeasts, moulds, and Gram-positive and Gram-negative bacilli. In conclusion, he recommends that raw fruit should be washed in ordinary drinking water at least once. Sartory-Filassier (1909) also found that the bacterial count was markedly decreased by repeated washing. In my own investigations three kinds of fruit were used—namely, dates, grapes, and cherries. As the aim was not to estimate the bacterial content, but to find out the nature of the organisms present, the following procedure was adopted.

By means of sterile forceps the fruit was introduced into flasks of ordinary broth, which were then placed in an incubator at 37° C. The following day a loopful of the broth was inoculated on a MacConkey plate. A blood-agar plate was similarly treated. A tube of sterilized milk and a maltose agar slope were also inoculated.

Experiment I.—Dates

The dates examined were obtained in boxes or packets, and may conveniently be divided into Tunis dates and Iraq dates. The former were French packed, while the latter were either British packed or packed locally in the country of origin. The Tunis dates, comprising six different brands, were in oblong boxes in two layers, the top layer being covered with a strip of transparent paper as if to give an impression of cleanliness. The top layer was discarded, and ten or twelve dates were taken from the bottom layer and put into two flasks of broth. The cultural findings were as follows:

Tunis Dates (16 Examinations)

Nature of Organisms	Times Isolated
B. subtilis and allied organisms	16
Streptococci	16
Yeasts	8
B. coli	7
Staphylococci	7

The biochemical reactions of the streptococci were tested, and by the Holman classification, which is sufficient for our present purpose, were found to be *S. faecalis* (12), *S. mitis* (9), *S. equinus* (2), *S. salivarius* (2). The figures in brackets denote the number of samples from which obtained.

The heat-resistance test was carried out (half an hour at 60° C.). *S. faecalis* was heat-resistant. In my experience *S. mitis* was sometimes resistant and sometimes not.

Iraq Dates (9 Examinations)

Nature of Organisms	Times Isolated
B. subtilis and allied organisms	9
Streptococci	4

The streptococci were: *S. faecalis* (1), *S. mitis* (3), *S. salivarius* (1).

Experiment II.—Grapes: Twenty Examinations

The grapes investigated were all imported, and came from our Colonies, the Continent, and the Argentine.

The result was as follows:

Nature of Organisms	Times Isolated
B. subtilis and allied organisms	20
Streptococci	19
Staphylococci	6
Moulds	1

The streptococci were found to be *S. mitis* (15), *S. equinus* (13), *S. salivarius* (3), *S. faecalis* (2).

Experiment III.—Cherries: Ten Examinations

The cherries were from France (6) and from England (4), and the following result was obtained.

Nature of Organisms	Times Isolated
B. subtilis and allied organisms	10
Streptococci	9
Staphylococci	6
Diphtheroids	1
Moulds	1

The streptococci were: *S. mitis* (5), *S. equinus* (5), *S. faecalis* (4).

In addition to the organisms obtained in the foregoing fifty-five examinations a storm-clot was observed in the tubes of milk on eleven occasions, as if denoting the presence of *B. welchii*, but this was not definitely proved.

Discussion

It may be accepted as a fact that all raw fruits exposed for sale are vehicles of bacteria. Some observers have pointed out that fruit, even in its natural state on the tree, may harbour bacteria, but at the moment we are more concerned with the state in which it is retailed to the public. The omnipresence of micro-organisms, coupled with the unavoidable handling of the fruit that takes place between the grower and the consumer, precludes any other condition than that of gross contamination.

Fortunately the vast majority of germs attached to the surface of fruit are quite harmless. But that organisms of a pathogenic nature may at times be deposited requires no great effort of the imagination. One readily thinks of the handling of fruit by unrecognized typhoid carriers, to the exposure in shops to germ-laden dust, and to the raids of flies, which are well known to be potential vectors of pathogens. Forty years ago Schnirer isolated the tubercle bacillus from grapes bought in a market in the vicinity of a clinic for tuberculous patients.

Interest and concern in the possible pollution of fruit and vegetables by the typhoid group of organisms have not been stimulated to the same extent with us as on the Continent. This is readily explicable by the custom on the Continent of farmers using the contents of the domestic cesspool as a fertilizing agent on the fields. If any of the typhoid group are present in this manure, the danger of vegetables becoming polluted by these organisms through soil contamination is obvious. In this country watercress, growing in sewage-polluted water, has been definitely incriminated. It is not so easy to envisage the possibility of the contamination of fruit in this way. Some writers, however, believe in the danger of this transmission, and point to the incidence of typhoid fever in the summer and autumn months, a period when raw fruit and vegetables are principally consumed (Bormans and von Drigalski).

Apart from any definite disease, and apart from the diarrhoea and colic sometimes caused by the ingestion of unripe fruit, it seems not unreasonable to suppose that at least some of the minor gastro-intestinal disturbances that are common in the fruit-eating season may be due to the bacterial content of the fruit.

In this country raw fruit, unlike some other food substances, is not associated with outbursts of food poisoning by the Salmonella group of organisms. In America tinned fruit has occasionally given rise to a kind of food poisoning by *B. botulinus*. In the present investigation no frankly pathogenic germs were isolated.

The types of streptococci cultivated are generally regarded as saprophytes. As to their derivation, the *S. faecalis* is commonly present in human faeces, and is much rarer in the faeces of animals, so that it may be assumed to be of human origin in the cases under review. *S. mitis* may be present in the mouth or intestine of human beings. As its name implies, *S. salivarius* is a mouth organism, *S. equinus* is looked upon as being derived from horse dung. This gets pounded up, and the organism may get blown about in the dust and thus on to fruit. It was interesting to find *S. faecalis* present in 75 per cent. of the samples of the Tunis dates tested. While *S. faecalis* is normally a saprophyte, there is some evidence to show that occasionally it may become pathogenic.

Streptococci are sometimes incriminated with food poisoning. Thus Aokai and Sakai[3] have described an outbreak of gastro-enteritis among the operatives of a silk-spinning mill due to the ingestion of fish contaminated with streptococci. They were non-haemolytic, and of the nature of enterococci (*S. faecalis*). They were present in large numbers in the remains of the fish, and were obtained in pure culture. They were also found to be very numerous in the stomach contents and in the intestines of the sick. *B. coli* was found in almost 44 per cent. of cases of Tunis dates. Perhaps a more intensive examination would have shown a higher percentage. On the other hand, they are probably not so tenacious of life as *S. faecalis*, and so tend to die out sooner. One of the strains was mucoid on culture.

Hunwicke and Grinling[4] have reported a severe case of colitis in a young child after eating packed dates. A mucoid Gram-negative bacillus was obtained in almost pure culture from the stool. They proceeded to examine some samples of dates—seven being boxed dates and four being block dates. From six of the seven boxes they obtained a similar organism, while the block dates were free from intestinal organisms. So far as the Iraq dates are concerned I was less successful in isolating *S. faecalis*. It was obtained only on one occasion, and that from a packet marked "sterilized." *S. mitis* and *S. salivarius* were grown from a packet of stoned dates marked "fully sterilized." In connexion with stoned dates, of course, the remark "fully sterilized" is equivocal. It may mean in the bacteriological sense or in the physiological sense.

Examination of grapes and cherries yielded more or less similar results. The preponderating streptococci were *S. mitis* and *S. equinus*. The *B. coli* was not demonstrated. With regard to the staphylococci obtained from the three kinds of fruit tested, it is somewhat surprising that these common contaminants were not met with in greater numbers.

It is a comfort to know that the germs present on the surface of fruit do not penetrate through the unbroken skin to the edible pulp. This has been noted among others by Mills, Clifford, Bartlett, and Kessel.[5] Again, Mackie and Trasler,[6] in the course of an investigation into cholera, went into the question of the possible incrimination of the melon as a transmitter of the vibrios. They found that the inside of the fresh unruptured fruit was sterile and could be bought with safety, but that the slices of melon exposed for sale were fraught with danger and should be avoided.

How long the typhoid bacillus can retain its vitality living as a saprophyte under different environmental conditions has often been a subject for study. Bindseil[7] carried out a series of observations on the duration of life of typhoid bacilli on the natural surface of fruit and on the cut surface. Using ten fresh fruits and three kinds of dried fruits, he found that the viability was longest on grapes—namely, fifty days. It is interesting to note that their expectation of life on the cut surface is very

much shorter. This is said to be due to the acid content of the fruit (Faranda). Naturally their life on the cut lemon was a bitter experience, but it lasted only some forty-eight hours. As Bindseil did not use dates in the above series, the following experiment with that fruit may be recorded, especially as the viability extended over a longer period.

Experiment IV

An agar slope culture of the typhoid bacillus was emulsified in normal saline. Two loopfuls of the emulsion were placed on the surface of a series of dates, which were put in a Petri dish, and kept in the dark at room temperature. I found that some of the bacilli were living on the sixty-eighth day.

Hunwicke and Grinling,[4] already mentioned, state that when dates are packed in Europe a solution of glucose is sprayed over them. It is possible that the increased viability on dates is due to the presence of glucose.

With the knowledge, then, that the surface of raw fruit is infested with micro-organisms, how are they to be dealt with? In certain countries, owing to the prevalence of intestinal diseases, it is considered wise to take precautions to disinfect fruit when it is to be eaten in a raw state. The American authors[5] above mentioned, dealing with conditions in China, went into the merits of different methods of disinfection, such as chlorinated water, potassium permanganate solution, alcohol, and boiling water. They came to the conclusion that the only method which will kill all pathogenic bacteria, and at the same time protozoan cysts and helminth eggs, was dipping fruits into boiling water for ten seconds. Such drastic measures are, of course, unnecessary in this country, as the danger of contracting disease in this way is so much smaller.

If the skin of the fruit is to be eaten all that is recommended is that, in order to minimize the risk of infection, the fruit should be washed in running water or some changes of water. This good advice given, it only remains to be said that from a hygienic point of view the best type of fruit is where the skin is inedible, in which case any contingent contamination is under the complete control of the consumer.

My thanks are due to Dr. Logan of this department for his valuable suggestions.

REFERENCES

[1] Medical Research Council: *A System of Bacteriology*, iii, 80.
[2] Hoder: *Deut. med. Woch.*, 1929, lv, 830.
[3] Aokai and Sakai: *Centralbl. f. Bakt.*, 1826, xcviii, 145.
[4] Hunwicke and Grinling: *Lancet*, 1928, ii.
[5] Mills, Clifford, Bartlett, and Kessel: *Amer. Journ. Hyg.*, 1925, 559.
[6] Mackie and Trasler: *Ind. Med. Gaz.*, 1922, lvii, 121.
[7] Bindseil: *Zeit. f. Hyg. u. Infektionsk.*, 1917, iv, 181.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

AN UNUSUAL SYMPTOM IN PERICARDITIS

Recently I attended an old woman who stated that her age was 88 and who complained of sore throat, which she said had troubled her for over a week.

On examining the throat I found nothing amiss, but she persisted that she had a sore throat, and went on further to say that it was so bad that she had been totally unable to swallow since the trouble began. As, however, she had had (for her age) quite a good breakfast and had rejected nothing, it was evident that this part of her story was not in accordance with fact. Before dismissing her complaint as entirely the product of senile dementia it was obviously necessary to find the cause—if any—of her dysphagia. She was therefore submitted to a routine examination, and was found to have an entirely unsuspected dry pericarditis, with a coarse murmur widely transmitted up and down the sternum and continuing independently of the respiratory movements. Apparently the transmission of a mouthful of food through the thoracic portion of the oesophagus to some extent interfered mechanically with the inflamed pericardium, giving rise to painful sensations, which were misinterpreted as "sore throat," owing to their association with the act of swallowing. The dependence of this symptom on the pericardial condition was further shown by the way in which it entirely disappeared as the pericarditis settled down within a comparatively short time of its coming under observation.

This symptom is not mentioned in either Osler's *Principles and Practice of Medicine* (sixth edition, 1906), Taylor's *Practice of Medicine* (fourteenth edition, 1930), E. M. Brockbank's *Diagnosis and Treatment of Heart Disease* (sixth edition, 1930), or in Sir James Mackenzie's *Diseases of the Heart* (fourth edition, 1925). The last authority remarks very truly of pericarditis (p. 393) that "it is essentially a painless complaint." It is, however, very fully alluded to by F. T. Roberts in Allbutt and Rolleston's *System of Medicine* (1909, vi, 47, 49), where it is said to be mainly the result of the pressure of a large pericardial effusion upon the oesophagus, and to be relieved by raising the upper part of the body and leaning forwards. He entertained the possibility of the discomfort sometimes being due to oesophageal spasm. Sibson's observations were also alluded to—namely, of occasional deep-seated pain between the shoulder-blades behind, made worse either by swallowing or by belching, and occasionally only thus elicited. Sir W. H. Broadbent and J. F. H. Broadbent, in their *Heart Disease* (fourth edition, 1906, p. 37), also refer to the possibility of pain or of difficulty in swallowing if there is a large fluid effusion, or if the posterior aspect of the pericardium is inflamed. Finally, A. MacPhedran, in Osler and McCrae's *Modern Medicine* (third edition, 1927, iv, 369), has noted the possibility that in pericarditis the passage of nourishment may give rise to pain, explaining this by the normal contact between oesophagus and pericardium in the chest.

Manchester. W. J. RUTHERFURD, *M.C.*, M.D.Glas.

AN UNUSUAL ABDOMINAL CONDITION

The following case appears to me to be of some interest, first on account of its comparative rarity, and secondly because of its unforeseen though fortunate outcome.

I was called to see the patient—an adult male—at about 2 a.m. His history was as follows. He had returned home some two hours before from a dinner and dance, having driven his car some sixty miles. The dinner was a Highland function, and my patient had the honour of making his first acquaintance with the true accompaniments of such a feast. He had never had a day's illness in his life.

I found him in great pain. He was unable to stay in bed, but rolled about the floor with his knees drawn up, having been awakened about half an hour previously by severe pain in his stomach. His epigastric region was acutely tender and rigid. His temperature was subnormal and pulse 100, rising to 120 during observation. He looked ill and shocked; his upper abdomen was retracted and immobile, but he had not vomited. An acute lesion of the upper abdomen was diagnosed. Dry heat was applied to the upper abdomen, and preparations for a laparotomy set on foot. I saw the patient again at 7 a.m. His condition was then such as to make me wonder whether I had not also been present at the dinner. He had no pain, and was sleeping comfortably. His pulse had fallen to 72, and all epigastric rigidity and tenderness had vanished. I accordingly suspended further activities, and the patient spent the following two days in bed. He then returned to work.

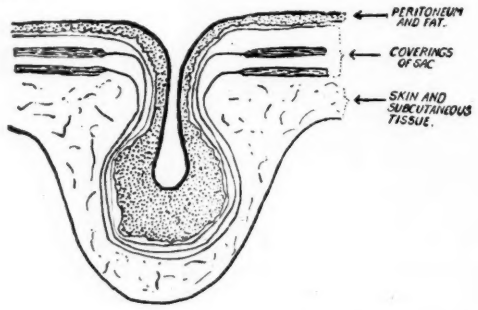
Three weeks later I saw him again. He had that day found a small, tender spot in the median line of his abdomen, just above the transpyloric plane. I could feel something hard just under the skin, so with the aid of a local anaesthetic I made a small skin incision, and extracted without difficulty a piece of bright yellow wire, 5/8 in. long, curved slightly on itself, with exceedingly sharp points. It was obviously a fragment of wire from one of the wire sponges commonly used to-day to clean out pans and other cooking utensils. The after-history of the case was uneventful.

Shrewsbury. D. A. URQUHART, M.B., Ch.B.

STRANGULATION OF EXTRAPERITONEAL FAT IN AN INGUINAL HERNIA

One would have thought that no further novelty of either simple or strangulated hernia could possibly be described. The following case, however, illustrates a new and extraordinarily interesting variant.

The patient, a carpenter aged 58, while straining at stool three days before admission to hospital, " felt something go," and noticed a swelling in his right inguinal region. He was positive there had been no previous swelling there, although he had had a left inguinal hernia for about twenty-two years. Next day he commenced to vomit, and had slight pains in the umbilical and right inguinal regions. About twelve hours later he developed diarrhoea. The swelling increased slightly in size, and could not be reduced either by the patient or by his doctor.



On admission he was found to have a tense, irreducible, smooth swelling, the size of a large walnut, at the right external inguinal ring. It was not particularly tender. The temperature was 98° F. and the pulse 84. It was thought to be a case of " nipping " of the small bowel of Richter's type, or of strangulated omentum.

Under percaine spinal anaesthesia the swelling was cut down upon and a bluish-black lobulated tumour, the size of a cherry, was exposed, protruding through the external inguinal ring. Some confusion was caused for a time, as this was strangulated fat exactly resembling strangulated omentum, yet no sac had been cut through and no fluid released. Also, when attempting to free the neck of the hernia, it was possible to draw about one and a half inches of apparently normal omentum through the inguinal ring, and yet no probe could be inserted into the peritoneal cavity. Eventually the healthy-looking pedicle was carefully incised, and, after a thick layer of fat had been traversed, serous fluid escaped, the peritoneal lining became visible, and it was obvious that part of the parietal peritoneum had been herniated through the external ring with its extraperitoneal fat, and the fat at the fundus of the sac had become strangulated by the ring itself. This might perhaps have been an extraperitoneal lipoma, but in the strangulated state it was impossible to say whether it had been a tumour or just a collection of normal fat. No capsule was evident, either microscopically or macroscopically. The ease with which the peritoneum could be drawn down showed that the hernia was of the sliding type. There was nothing in the sac save free fluid, and no other hernial sac was discovered in the canal during operation. The sac was excised, and the inguinal canal repaired after the manner of Bassini.

The symptoms were immediately relieved by operation, and the patient made an uninterrupted recovery. The diagram explains the anatomy.

While the irreducibility of fatty femoral hernia sacs is a familiar enough phenomenon, the strangulation of extraperitoneal fat in a sliding inguinal hernia of only three days' duration is a sufficiently rare occurrence to deserve comment, especially because, if not recognized early during operation, much confusion will arise in " placing " the anatomy of the region.

My thanks are due to Mr. Lake for permission to report this case.

H. A. Phillips, M.D., F.R.C.S.,
Late Acting R.M.O., Bolingbroke Hospital.

Reports of Societies

THE PROBLEM OF SCHIZOPHRENIA

At the first meeting of the session of the Section of Psychiatry of the Royal Society of Medicine, on November 8th, Dr. Bernard Hart, the retiring president, introduced the new president, Dr. Henry Devine, who gave an address on the problem of schizophrenia.

Many years ago, he said, Kraepelin had expressed the view that the causes of dementia praecox were wrapped in impenetrable obscurity, and, although definite additions had been made to our knowledge since that time, we still could not state in a few words why these patients were ill, and we were more or less helpless as far as curative methods of treatment were concerned. Recent statistical studies showed that the remission rate among treated cases did not differ materially from that among untreated cases. A large majority of the confirmed cases in mental hospitals were schizophrenics. These patients had shut themselves off from the pain and struggle of life, and lived in a world of their own, shunning social contacts and indifferent to their environment, comfort, or appearance. Wealth, success, knowledge, culture, and even love meant nothing to them, but they were not devoid of an inner psychic life, and even advanced cases were aware of their surroundings and were capable of remembering past events. A katatonic and inaccessible patient might suddenly exhibit a change of phase, and pour out a stream of delusional talk, revealing an unexpected richness of inner experience. The psychiatrist was at a disadvantage with a schizophrenic patient, because his delusional outlook was remote from normal thought. Up to a point the psychiatrist could elucidate the " meaning " of these psychic products, but much was encountered which was undecipherable. The delusional psychotic was in the position of being unable to share his beliefs with anyone.

In some measure every normal person had experiences, when asleep, which would enable him to understand the world of the schizophrenic, and similar experiences were encountered under the influence of psychological stress. On one occasion, stimulated by nitrous oxide gas in the dental chair, Dr. Devine had thought himself in an operating theatre where a number of psychiatrists were taking part in an operation ; a formula had been discovered which made the whole of life comprehensible. During recovery of consciousness he experienced deep disappointment at the loss of the formula. On a second occasion, when suffering from an abscess near the shoulder, he had felt a sense of detachment from life ; during the subsequent illness he fell into a dreamy state, and fancied himself among a gathering of people who enunciated a theory which again made the universe comprehensible. On attempting to communicate this discovery to the nurse he found that the words he was using were meaningless.

Some cases of schizophrenia were the result of toxaemia, psychic trauma, or infections such as influenza, and the outcome of these was not necessarily unfavourable. Given certain conditions, everyone was liable to exhibit schizophrenic reactions. In these psychoses it was possible to see the realization of desires which had never been adequately satisfied. In many of the morbid psychic productions it was possible to discover resemblances to myths and fairy tales, such as the magic key which opened the door to the secrets of life, the transformation of a weakling into a Samson, the fantasy of royal or noble parentage. There was relative coherence in these fantasies, although the scattered and fragmentary speech of the patient gave an impression of incoherence to the observer, because the connecting links were hidden. These morbid productions might be described as " psychic neoplasms " ; they were alive and grew, encroaching on the life of external relations. The source of the psychotic symbolism was to be found in the conative-affective tendencies, but the intellectual functions were remarkably unaffected in many cases. The development of a psychosis was analogous to the birth of an instinctive tendency—for instance, to the

development of sex during puberty ; when the delusion emerged there was sometimes a cessation of tension and a feeling of tranquillity as though the whole life of the patient had been moving inevitably towards its solution in the psychosis. It was possible to see in this an effort on the part of the organism to achieve a state of equilibrium. Dementia praecox was not a disorder of the functions most recently acquired in evolution, but was a deterioration or inadequate development of the affective and instinctive tendencies which we shared with all living creatures from the amoeba upwards.

On the therapeutic side the use of pyrexial and shock therapy had met with some success. Recently it had been found that chemical methods were capable of producing similar results, though these were usually transient. Sodium cyanide, on intravenous injection, stimulated the respiratory centre and produced a temporary improvement in the mental state of patients, and inhalation of increasing concentrations of carbon dioxide mixed with oxygen produced cerebral stimulation for periods ranging from five to twenty-five minutes. Recently sodium amytal had been found to produce similar results ; when the patients awoke from the sleep induced by the drug they were in a more or less normal mental state for a time. Mlle C. Pascal employed a variety of clinical stimulants, either alone or in combination, including ether, chloral hydrate of cocaine, strychnine sulphate, hashish, mescaline, and nitrous oxide by inhalation. When the stimulation was successful in breaking down negativism and mutism an attempt was made to explore the psychic life of the patient. The purpose of such investigations was to give precision to diagnosis and prognosis ; it was not possible to claim that any notable advances in treatment had been achieved. As we did not know the actual causes of this disorder, we were not really in a position to combat it.

EPITHELIOMA VULVAE

At a meeting of the North of England Obstetrical and Gynaecological Society, held in Liverpool on October 28th, a paper on epithelioma vulvae as an occupational disease amongst cotton spinners was read by Dr. E. A. Gerrard (Manchester).

Dr. Gerrard gave extracts from the literature on the subject, and stated that while many authors had suggested possible factors in the causation of epithelioma vulvae, common ones being leucoplakia vulvae, syphilis, and trauma, no one had made any observations on the true underlying cause, except to suggest that it was some form of chronic irritation. An extensive inquiry into the occupations of patients suffering from this condition was carried out, and some 373 cases were investigated. In certain cases the cancer arose a number of years after the patient had ceased to follow an industrial occupation, but as a latent period is accepted in cases of epithelioma of the scrotum it appeared reasonable to assume its possibility in the corresponding condition of the vulva. In an analysis of 101 patients with a full history 59 per cent. were found to be working or to have worked as cotton operatives. This figure was contrasted with the general admissions of those similarly employed as compared with the total general admissions of women patients aged 20 years and upwards in two representative hospitals, and the percentage was only 28. This suggested that there was a possible relationship in certain cases between the occupation and the disease. An attempt was made to establish the influence of mineral lubricating oil as a causal factor in view of the known effect of this substance among male cotton spinners. Certain facts were elicited. In the case of cotton spinners the air of the mill contains oily fluff and the spinners' hands are always oily. In the case of weavers the hands are oily, and the act of sweeping the looms with an oily brush, sometimes in a squatting position, suggests the possibility of transference of oil to the external genitalia. Investigation of the occupation of twenty-seven husbands of women who had not worked as operatives showed that in ten there was a possibility that oil might be a causal factor. A further investigation of cases in a Yorkshire town showed that 73 per cent. of the total number of patients suffering from epithelioma vulvae were woollen operatives and ex-operatives. After commenting on the scarcity of the condition among better-class patients Dr. Gerrard concluded by suggesting that, in certain cases, the vital factor in the production of the disease was contact with mineral oil.

Trichomonas vaginalis

Mr. P. Malpas (Liverpool) read a note on *Trichomonas vaginalis*, and referred to the opinion held generally in America and on the Continent that the organism was pathogenic. One hundred consecutive gynaecological cases were investigated and trichomonads were present in eleven, but in large numbers in only four. Taking only cases of leucorrhoea, the organisms were found in 36 per cent. of cases as compared with 11 per cent. of all cases investigated. Mr. Malpas described the method of detection of trichomonads by examination of discharge mixed with normal saline on a slide using a 1/6″ objective. The typical appearances were the refractility and characteristic movements of the organisms. The discharge in cases of heavy infection was foaming, and resembled "cuckoo spit," while mucus was absent. The trichomonads could only be cultured for a few days owing to the presence of a heavy bacterial infection. With reference to the disputed question of the pathogenicity of the organism, Mr. Malpas mentioned three propositions: (1) That the *Trichomonas vaginalis* was the prime cause of some cases of vaginitis. Against this contention were the facts that in cases of leucorrhoea the trichomonads were never found except in conjunction with bacterial infection, and further, that the organisms might be found accidentally in enormous numbers in cases with little discharge and no symptoms. (2) That the Trichomonas was a harmless saprophyte. (3) That the organisms might so modify the discharge as to aggravate the symptoms. Mr. Malpas favoured this view owing to the presence of marked subjective symptoms such as burning and pruritus in conjunction with a heavy infection. No form of treatment appeared to be specific, as, although the organisms could be easily destroyed by simple antiseptic measures, they frequently reappeared.

Mr. W. W. King (Sheffield) had found that the discharge when this infection was present varied greatly and might be almost completely absent, and he agreed as to the absence of mucus. He mentioned as diagnostic points the facts that the introitus vaginae and vaginal walls might be spotted with small red areas and shiny ("strawberry vagina") and that the rugae were swollen.

"THE DOCTOR IN THE BOX"

In a paper read before the Medico-Legal Society on October 27th, Lord Riddell being in the chair, Sir John Collie recounted many interesting personal experiences, and offered some hints to the practitioner whose work brings him into contact with compensation and other medico-legal cases. Dealing with the subject of malingering in the Army, Sir John said that many years ago the Indian Government had no Pasteur Institute in India, and every soldier who received a bite from a dog or wolf suspected of rabies was sent to Paris for a course of inoculations. The number of cases which had to be sent off was surprising. One day a doctor was visiting a sick man, and struck his foot against a hard substance below the bed. On examination he found it was the lower jaw of a dog firmly attached by wires to a board, and above it the rest of the skull attached with a hinge. This was used to produce a dog bite. It was, of course, supplemented by a statement that the animal had rabies and had disappeared in the jungle. Amongst the advice which the speaker gave to medical men who find themselves in the courts was a recommendation that notes should be taken at the time of examination of a case *and preserved*—doctors were sure to be asked in the witness-box whether this had been done. Time should not be wasted in labouring academic points of no practical utility. In writing a report they should not be biased by sympathy.

and if it was suggested to them in court that they were fundamentally ignorant of the elementary facts of their profession, they should not be surprised. Sir John Collie's advice was: "Take no notice. If you do much county court work you will get used to it. It is all a game, and you had better try and enjoy it. When a case in which I am engaged is lost I forget it and leave the solicitor to worry." He went on to say that those who found themselves in the witness-box should never be afraid of admitting that they were not omniscient; but they should remember the traditional advice, "Where a road bends abruptly, take short steps."

Sir John Collie advised the medical witness to tell counsel with much apparent candour that he was not a specialist (if this was true), that a specialist knew everything about something, but that he (the doctor) had always aimed at knowing something about everything. In the rough and tumble of cross-examination, this might be of assistance in negotiating an awkward corner. Doctors were often asked by counsel whether a patient was malingering, and felt from the atmosphere of the court that, if they said "Yes," everyone, including the judge, would be angry. The best thing to say was that they had thoroughly examined the case, that there were complaints of many things, but that no physical signs could be found. To the repeated question, "Is he a malingerer?" one could quite truthfully answer that one did not know. It might even be advisable to answer somewhat as follows: "He is really physically fit, but requires that push towards usefulness that many men who are off work need. He is an irresolute individual and would have a little inconvenience at first, which any reasonable man would put up with. He has no real incapacity, but a feeling of inability caused by nervousness, all of which could be overcome by work. He is brooding over his recent injury, and the compensation he is receiving takes away the stimulus to work. Half wages mean semi-starvation, and have a bad physical and moral effect." Other points in the paper were: "Never go into a witness-box without having had an *x*-ray examination of your subject for a case in which it could be of the slightest assistance. Many people follow the plate into the dark room, discuss the condition with the radiographer, and initial it so that they can identify it in court. Pain in the back in the majority of cases is psychical, not physical. The keynote to successful treatment of a neurasthenic is to get the patient to make an optimistic inventory of his mentality."

HEART ATTACKS

At the last meeting of the Brighton and Sussex Medico-Chirurgical Society Dr. DONALD HALL read a paper on heart attacks. He said the term was not infrequently used incorrectly, but it was one constantly met with by every busy practitioner, and one apt to be associated with an atmosphere of alarm. Palpitation, breathlessness, and pain were the three main symptoms which were interpreted by patients as heart attacks, while faintness or actual loss of consciousness brought an urgent summons from patients' friends. Palpitation in the main was not indicative of organic heart disease, but rather of cardiac irritation. Paroxysms of fibrillation or of flutter and paroxysmal tachycardia were examples of heart attacks in which palpitation was the outstanding symptom. Of these paroxysmal auricular fibrillation was, in his experience, the most common. The treatment of these attacks by digitalis and quinidine was discussed, and attention was drawn to the anginal pain which might accompany paroxysmal tachycardia. The various foci of the latter, including an example of ventricular tachycardia, were illustrated by electrocardiograms. Shortness of breath was the commonest symptom of heart disease. Two forms stood out as "heart attacks"—cardiac asthma and acute pulmonary oedema. In both there was left ventricular failure, and it might be difficult at first to determine whether the primary disease was cardiac or renal. In both the ultimate prognosis was unfavourable, but much could be done to alleviate distress and temporarily to tide over the emergency. Fortunately, many attacks the feature of which was pain were not heart attacks at all. Those of true cardiac origin were of two types: that of angina pectoris, short, and brought on by effort, and the prolonged pain of coronary thrombosis usually occurring at rest. In both, the site of the pain, its character, and its radiation were identical. The site was behind the sternum, usually mid-sternal, but always in or near the mid-line. It was when the pain was referred lower to the xiphisternum or epigastrium that confusion was apt to arise. Then the pain might be mistaken for dyspepsia, or the abdomen opened for a supposed acute surgical emergency. On one occasion he had been called in to advise on the convalescence of a coronary thrombosis and had found a partially absorbed left pneumothorax. Quite frequently the diagnosis of angina pectoris had to be made and maintained on symptoms in the absence of physical signs and, it might be, with a physiological electrocardiogram. In coronary thrombosis most cases could be diagnosed with certainty on the clinical evidence, but an electrocardiogram strengthened the position, especially during convalescence, when patients, freed from pain, were apt to rebel against the restrictions put on them. Serial electrocardiograms were particularly helpful in estimating the recovery of the myocardium. Treatment was now on firmly established lines, and the prognosis was correspondingly improved; for in the past, when the distinction between coronary spasm and coronary occlusion was unrecognized, many patients had been permitted to be up and about much too soon. Electrocardiograms of coronary thrombosis in successive stages were shown. Heart attacks with faintness were the variety particularly associated with alarm. The recent work of Sir Thomas Lewis on vaso-vagal syncope was summarized. It had awakened fresh interest in Gowers's syndrome. Epilepsy had to be excluded, and this was usually easy; but he had known the loss of consciousness of the Stokes-Adams syndrome mistaken for epilepsy. In labyrinthine disease tinnitus and deafness were present, as well as faintness. Ectopic beats of ventricular origin were a frequent cause of minor attacks, especially in elderly people with low blood pressure.

PSYCHOLOGY AND THE WOMAN

At a meeting of the Medical Society of Individual Psychology on November 10th, with the president, Professor W. LANGDON BROWN, in the chair, Dr. J. S. FAIRBAIRN read a paper on psychology in gynaecological and obstetric practice.

He said that one of the outstanding needs of medical practice at the present time was its infusion with the tenets of psychological medicine. To see any case in correct perspective the patient must be regarded as an individual with a mind as well as a body. Recent increase in the knowledge of pathology, with its accurate classification of the processes of disease, had led, however, to a concentration on the disease and a decrease in the consideration of the personality of the patient. Gynaecological practice illustrated the dangers arising from this attitude. Over-operation, for example, had taken place because the body alone had been considered and the mind ignored. Dr. Fairbairn then reviewed certain conditions illustrating the importance of the individualization of the patient. In the management of the expectant mother the study of the individual was the essential thing. Mental states, such as fear, or lack of confidence or self-control, were the most frequent causes of disordered action of the uterus in the otherwise normal patient. Mental states affected lactation even more obviously: the nervous woman was always regarded as a poor nurse. The unwilling mother was a hopeless problem; some enthusiasm must be roused to obtain even moderate success. Disorders of menstruation might have a local pelvic, a general constitutional (that is, metabolic), or a psychical cause; or all three might have a share in producing the disturbance. Disorders of menstruation were therefore especially instructive instances of the need for the thorough investigation of the patient as a human being with social relations as something more than an anatomical specimen of mankind. Dysmenorrhoea was largely mental in origin. Dissatis-

faction with the feminine role might play a part, but the suggestion of menstruation as an illness, and its usefulness as an excuse for failure or the avoidance of doing what was uncongenial, explained most cases. The abdomino-pelvic ailing woman, with a degree of disability difficult to correlate with the physical condition, formed an extraordinarily difficult problem, and was very common. He considered that operation for the abdominal or pelvic laxity, so often present, was advisable only if it would make such a material change as would be obvious to the patient. Dr. Fairbairn stressed the importance of fatigue, or what, as a diagnosis for his students, he called the "tired mother." She was a woman socially above the hospital class, but who, unable to afford domestic help, devoted herself to the maintenance of the respectability and credit of the family. The husband characteristically exhibited the same love of respectability, but was also very ununderstanding. The woman who had "never been the same after the baby was born" was well known to the gynaecologist. Dyspareunia was frequent, and the disability seemed to be largely a defence against pregnancy.

Dr. F. M. Edwards said that the psychological implications in gynaecology and obstetrics were very important. She touched upon the stresses which might produce dysmenorrhoea, and cited a patient in whom profuse periods coincided with the possibility of marriage, and another where the same symptom had a definite symbolic value. Dr. H. C. Squires remarked that similar reactions to stress occurred in white, black, and brown people. Women in the East had particular difficulties—for example, child marriage. Dr. T. Lawson pointed out that just as an infant wished to compensate for inferiority, so did an adult. The irrationality of disease was explained by considering the line along which he was acting. He regarded dysmenorrhoea as a masculine protest, and the "tired mother" as an expression of the wish for appreciation. Dr. H. C. Woodcock said that Adler's view—that marriage was a task for two people—suggested that pre-marital as well as pre-natal instruction should be undertaken.

Dr. F. G. Crookshank said that behind the definite symptoms a present problem always existed which must be dealt with. It was important to distinguish between the goal or ambition of a person and the life style, which was the means by which the patient set about obtaining his end. The neurotic reaction was determined by the person's life style and the relevant organ inferiority. The imperfection was useful only when the life style was poor. Professor Langdon Brown touched upon the importance of organ inferiority. He alluded to the effect of injecting the cow with pituitrin—the animal could no longer hold up the supply of milk.

Dr. Fairbairn said, in reply, that the "tired mother" was an indication that she recognized her poor position. He had had a case similar to those mentioned by Dr. Edwards. Irregular haemorrhage occurred after a secret marriage. It ceased when the patient made her marriage known.

RESULTS OF APPENDIX OPERATIONS

At a meeting of the Section of Surgery of the Royal Academy of Medicine in Ireland, held on October 28th, with the president, Mr. Henry Stokes, in the chair, Mr. R. Atkinson Stoney read a paper on the results of appendix operations, based on 395 consecutive cases operated on since 1918. The total mortality was eight—practically 2 per cent. Four deaths occurred within a few hours of operation in patients who were profoundly ill, with high temperature, fast pulse, and cyanosis. One death occurred from pulmonary embolism, one from bronchopneumonia, and two from pulmonary abscess—one an abscess of the right lung in a septic case, the other an abscess of the left lung in a clear case in which the anaesthetic was taken badly, artificial respiration being required. Leaving out 121 chronic cases, there were 274, with seven deaths—a mortality of 2.55 per cent. Stress was laid on the importance of the external rectus or Battle incision, especially if there was any suspicion of sepsis outside the appendix; also on the use of modified bipp in all septic cases, and free drainage with careful suture of the wound in layers around the drainage tube. The only complications in the whole series were: one case of residual pelvic abscess, cured finally by drainage per vaginam, and one of recurrent sinus in which the patient was killed as a result of an accident before an operation could be done to remove the appendix, which was not found at the time of the operation. There were no cases of subphrenic abscess, faecal fistula, obstruction, paralytic or mechanical, pylephlebitis or severe infection in the wound, or ventral hernia. Mr. Stoney stressed the importance of early operation in order to lower the mortality, and remarked on the lesser frequency of abscess and drainage in the later series of cases. Even in the cases drained the average stay in hospital was only twenty-one and three-quarter days, compared with fifteen and a half days for the undrained cases; 40 per cent. of the first eighty cases were drained, whereas only 25 per cent. of the last 105 cases were drained.

Mr. W. Doolin drew attention to the fact that the teaching of delayed methods of treatment in appendicitis was not a new one. He personally regarded it as most unsound doctrine. During the last year he had operated on fifty-one cases of appendicitis, and of these five had died, three being children under 5 years and one a man of 73. Acute appendicitis in infancy and in old age had a high mortality. He did not like bipp, because it seemed that one was putting a foreign body into the abdominal cavity. For some years he had used drainage, but latterly avoided it whenever possible. He felt that a drainage tube was very likely to form a fibrous band, having recently operated on two cases of acute ileus probably due to the use of drainage tubes. The differential diagnosis of appendicitis in the early stages could be extremely difficult. The coexistence of acute appendicitis and pregnancy was particularly dangerous, especially if the pregnancy had advanced to after the sixth month.

The President said the incision referred to by Mr. Stoney, the use of bipp, and drainage were all good if used at the right time. He referred to cases with typical acute signs, in which the appendix appeared to be perfectly normal, except for small pectoral haemorrhages. He felt that Mr. Stoney was to be congratulated on his extraordinarily low death rate. Statistics were much better now than twenty-five years ago, because the cases were seen much earlier.

SURGERY OF LUNG AND PLEURA

At a meeting of the Liverpool Medical Institution on November 3rd, with the president, Professor R. E. Kelly, in the chair, Mr. Hugh Reid read a paper on surgery of the lung and pleura. The paper was limited to recent advances in the treatment of pulmonary tuberculosis, and was illustrated by lantern slides showing extensive obliteration of the thoracic cavity in bronchiectasis, the effects of phrenic evulsion, artificial pneumothorax, apical, basal, and complete thoracoplasty, and the division of adhesions of the lung and their complications. Mr. Reid said that tuberculosis of the lungs healed by fibrous encapsulation. The most important factor in healing was individual resistance, and the next, functional rest of the diseased part. It was the object of the thoracic surgeon to bring about functional rest, and the various factors militating against rest were discussed. The elastic pull of the lung itself, the constantly moving bony thorax, and the muscle pull of the diaphragm were the three main factors. Artificial pneumothorax alone, by allowing the lung to collapse, was an extraordinarily useful procedure, and would arrest the progress of active spreading tuberculosis when every other conservative method had failed. There were, however, various difficulties, dangers, and complications of artificial pneumothorax. Thoracoplasty was often the only logical sequence of events in attempting to bring about functional rest. Phrenic evulsion or resection was discussed, and its wide range of usefulness, both as a measure in itself, as a preliminary to some other procedure, or for the relief of symptoms, was pointed out.

In the discussion which followed, Dr. DENNISON PICKERING said that, in considering surgical treatment of the lungs and pleura from the point of view of a private sanatorium, two questions must be answered: Whether? and When? Whereas some physicians deprecated any surgical measures at all, others would adopt them, without delay, in every case where possible. Dr. Pickering advocated an intermediate course. He pointed out that many patients had recovered without any surgical treatment. Moreover, in a private sanatorium, the suggestion of surgical treatment having usually come from the physician, the latter was considered responsible by the patient and his friends in the event of failure. He therefore suggested that a reasonable time should be allowed for conservative treatment before proceeding to surgical measures. As regards the second question, he said that haemorrhage might compel intervention. The presence of cavities, or any factor such as recurrent pleurisy, would suggest the inadvisability of losing time. Also the general condition of the patient must be considered. It was important to avoid the mistake of spending three or four months on conservative treatment only to find the patient too weak to undergo operative treatment which at an earlier stage might have been successful.

Dr. ROBERT COOPE said that the occurrence of cavitation in a lung, at whatever stage of the disease, should call for the most careful consideration of the various methods of treatment. It was a responsible matter to choose the right case for collapse treatment, and to advise the best method of obtaining collapse. Artificial pneumothorax, simple in its technique, was not quite so straightforward in its results; disappointment might come—even in cases apparently ideal for it—from unexpected pleural adhesions, the development of pleural effusion with its consequences, or the onset of contralateral phthisis. Taking the field of phthisis as a whole, he thought it would be found that phrenic paralysis had a much wider usefulness—sometimes for direct collapse, and often for the relief of troublesome symptoms. It appeared to be as useful in apical as in basal disease. He instanced the value of this procedure in other conditions, especially bronchiectasis. In this, perhaps more than in any other field of medicine, each case must be weighed up according to its own pathology; and because the illness was usually long, those looking after the patient must needs go carefully, feeling their way.

Dr. HENRY COHEN drew attention to the not infrequent digestive discomforts which followed left phrenicotomy. These he attributed to interference with gastric motility resulting from paralysis of the diaphragm. He emphasized that unilateral phrenicotomy was not without danger if emphysema developed. Dr. B. T. J. GLOVER referred to the need for further effort on the part of the physician to prevent the occurrence of the advanced and distressing conditions which led to the need for surgical intervention, and mentioned the favourable results which in the past had occasionally followed the use of tuberculin. These might have been attributable to a successful desensitizing action.

At a meeting of the London Association of the Medical Women's Federation, held on October 25th, Professor LUCAS KEENE delivered her presidential address, entitled "Anatomy, now and then." She began by showing photographs of sculptures of very early date, and drew attention to the fact that an artist who renders the human form in true anatomical detail is an anatomist, however unwitting or unscientific. She deprecated any attempt to draw definite conclusions as to the state of anatomical knowledge from the anatomy depicted by any small groups of works of art of a period, showing by photographs that wrong conclusions would necessarily be drawn were the state of present-day anatomy judged by the anatomy of figures sculptured by a certain well-known artist. She sketched the work and achievements of the greatest anatomists through the ages, and gave some excerpts from recent work to show that the modern trend of anatomical thought is not entirely divorced from practical medicine.

Reviews

RADIOTHERAPY IN CANCER OF THE UPPER AIRWAY

The full text of the Semon Lecture for 1931 by Mr. DOUGLAS HARMER is now published in the form of a small book.[1] The results of radiotherapy for tumours in the larynx, pharynx, nose, nasopharynx, palate, cheek, and upper jaw are analysed from statistics collected from a number of clinics, and from the results of cases under the personal observation of the author. The second group, though naturally smaller, is yet large enough to give a good indication of what can be accomplished by radiotherapy in the hands of a devoted and enthusiastic worker supported by a team well trained in radiology, physics, and what might be termed "radiopathology." It has the merit of accuracy and uniformity in all respects, being compiled from a faithful record of every case comprised in the group.

The collected statistics cannot give a complete picture, because they are open to the criticism that numerous cases are unrecorded, and failures are often not reported. For sarcoma and endothelioma the results are about the same in the two groups, but for carcinoma the collected results (29 per cent.) show a superiority of 10 per cent. over those of Mr. Harmer (19 per cent.), a superiority which is without question merely arithmetical and due to the sources of error mentioned and possibly others. The total of collected cases amounts to 2,687 of carcinoma, 259 of sarcoma, and 47 of endothelioma. Mr. Harmer's cases amount to 313 cases of carcinoma, 66 of sarcoma, and 32 of endothelioma. Of the whole number 1,032 are stated to be living. However discouraging individual cases may prove, these figures support the contention of the author that there is a great future for radiotherapy if the treatment is properly handled. The book also contains much information concerning the action of radium and the technical precautions which should be observed when using it in these regions.

The practice of radiotherapy must of necessity remain in the hands of specialists or groups of specialists, who should make a close study of this work, but it should appeal also to a wider circle of readers who wish to gain a general idea of the results which radiation is capable of producing.

FRENCH OPHTHALMOLOGY

The appearance of a fourth edition of *Précis d'Ophtalmologie*,[2] by Dr. V. MORAX of Paris, is a matter of interest to his colleagues throughout the world. His work is so highly valued that anything he writes must carry weight. The new revision has been made by himself and Dr. E. Hartmann. In nearly 900 pages there is a wealth of information, which is so well presented that there is never a dull patch. Especial note must be made of the excellence of the illustrations in the text; there are no fewer than 453 figures—a most liberal and even generous allowance. There is, in addition, an appendix of four plates giving reproductions of fundus drawings by Dr. Polack; these, however, are not of the same standard of excellence; the tints are too pink, and the effect is not so clear and demonstrative as might be expected in a book for students. As there are many black-and-white fundus

[1] *The Relative Value of Radiotherapy in the Treatment of Cancers of the Upper Air Passages.* University of London, Semon Lecture, delivered on November 5th, 1931, by W. Douglas Harmer, M.A., M.B., M.C., F.R.C.S. London: John Murray. 1932. Pp. vi + 85; 7 figures. 6s. net.)

[2] *Précis d'Ophtalmologie.* Par Dr. V. Morax. Quatrième édition, refondue. Paris: Masson et Cie. (Pp. xx + 896; 453 figures, 4 plates. 75 fr.)

drawings in the text, the plates are to some extent redundant.

Perhaps one thing that will strike the English reader is the large amount of space devoted to the description of plastic operations about the eyes. These descriptions are well done, and the illustrations are good. With some of the directions we may disagree. There are now few who will perform the old operation for epicanthus by excising an elliptical piece of skin from over the bridge of the nose. We have abandoned this method because the results are not permanent, and an ugly scar is left. Nearly six pages are given to a new description of the operation of dacryocystorhinostomy, and there are no fewer than nine illustrations. Kroenlein's operation gets three pages and four illustrations ; many other operations, more curious than common, also find a place in this work. On the other hand, the whole subject of muscle balance, which engages the keenest interest of English and American ophthalmologists, and the exploration of which is regarded as an essential part of the methodical examination of the eyes of every patient, is dismissed by Dr. Morax in a couple of pages, under the somewhat contemptuous heading of "Neurasthenie oculaire." Such an evaluation of the relative worth of the different sides of ophthalmic work by Morax—an acknowledged master of the subject—furnishes much room for thought.

The book will be of interest to all British ophthalmologists, and the differences displayed between British and French ophthalmological practice will be stimulating to them.

PRACTICAL ANATOMY

The most favoured, and in many ways the classical, textbook of practical anatomy is Cunningham's manual. For many years, however, teachers of anatomy have felt that this textbook is too detailed and voluminous for convenient use in the dissecting room, bearing in mind that the medical student of to-day labours under a distinctly overburdened curriculum, and cannot therefore be expected to pay much attention to the less relevant minutiae of topographical anatomy. An attempt to eliminate all but the essential and practical details of human anatomy was made by Professors Parsons and Wright in 1912, when they produced their two-volume dissecting manual, and this manual has since then been used with some success in several of the London medical schools. It had several disadvantages, however, in the unsatisfactory nature of many of the illustrations, in the too great condensation of some of the sections, and in the retention of the old nomenclature. A new edition has just appeared under the title of *Practical Anatomy*,[3] by Six Teachers. Since in this book (now reduced to a single volume by the use of smaller type and a thinner page) the original text of Parsons and Wright is retained almost unaltered except for comparatively slight additions and changes here and there, and over 200 of the illustrations are those drawn or planned by the original authors, it would be more correct, we think, to have called it "Parsons and Wright, revised by six teachers." The slight degree of alteration of the original text is indicated by the fact that a number of misprints and errors in that text are still present—for example, "convuluted" (p. 282), "right" (p. 196), and the origin of pectoralis minor (p. 9). An unusual number of misprints are also to be found in the new text figures. These new figures show, on the whole, a great improvement over those which they have superseded. Miss Barclay Smith is remarkably successful with her tone figures, but her line drawings lack the delicacy and neatness which are so essential for the ideal anatomical diagram. Some of the figures are open to more serious criticism. Thus the tensor fasciae femoris in Fig. 54 is in the wrong position, the cerebral vessels in Fig. 324 appear very anomalous, the attachment of the internal semilunar cartilage in Fig. 76 is unusual, and we are not able to understand how the superior oblique finds itself in Fig. 245.

It is open to question whether a dissecting manual should "limit itself strictly to what can be demonstrated in the dissecting room," which is the aim of this book as expressed in the preface. We think that this is a mistake, for under the conditions of work in the dissecting room it is necessary for the students to be engaged simultaneously in the study of many different parts of the body. It is therefore not possible to correlate the knowledge gained from dissecting with the practical and functional aspects of anatomy by giving a continuous series of demonstrations to each group of students. But a student is not in a position to understand the full significance of gross anatomical structures unless they are brought into relation with anatomical points which cannot be elucidated by ordinary dissection. In some sections of this book, as a matter of fact, the text does not limit itself in this way. Thus the very excellent section on the eye (by Professor Whitnall) contains many references to the functional significance of the structural details which the student can see for himself. We would like to see this policy carried much further, notably in the section dealing with the brain, where many details are unintelligible to the student unless he is given some clue to their functional implications. The book retains the old nomenclature, and this unfortunately adds much to the difficulties of the student who also uses the classical large textbooks of Cunningham or Gray.

[3] *Practical Anatomy*. By Six Teachers. Edited by E. P. Stibbe, F.R.C.S. London: E. Arnold and Co. 1932. (Pp. xii + 719 ; 337 figures. 30s. net.)

PAEDIATRICS

Dr. L. G. Housden's small work on *The Breast-Fed Baby in General Practice*[4] contains the essay which won the Sir Charles Hastings Clinical Prize of the British Medical Association in 1932. It is a valuable handbook on this difficult subject, for Dr. Housden shows a thorough grasp of the fact that most of the failures in breast-feeding are psychological or environmental in origin. He stresses throughout the normality of the vast majority of infants, and in introducing "the normal baby," especially to those "to whom he was formerly a stranger," he expresses the hope that they "may learn to know him and like him and leave him alone." This last phase receives emphasis in a later paragraph, where Dr. Housden puts forward a plea that every bottle of aperient should be labelled "poison"! Actually the book is less about babies than about mothers, since with a normal baby the secret of success lies entirely with the mother, and to make it more useful to the general practitioner (for whom it is presumably intended) there might very well be less about immune bodies in milk, drugs excreted by the milk, and useless galactagogues, and more exact detail on the management of normal breast-feeding. There does not seem to be any answer in Dr. Housden's book to such questions as "How much extra fluid does the nursing mother require each day?" "How much of this should be milk?" ("moderate quantities," writes Dr. Housden on page 97, but this is not exact enough). "When should the extra fluid be taken—at meals, or during baby's feeding times?" "Does the baby require extra water before feeds in addition to breast milk?" Dr.

[4] *The Breast-Fed Baby in General Practice*. By Leslie George Housden, M.B., B.S. London: H. K. Lewis and Co., Ltd. 1932. (Pp. x + 114. 4s. 6d. net.)

Housden's advocacy of the subcutaneous injection of milk to increase the flow is not convincing; but apart from these points the book is very welcome, and at its modest price is an easy and cheap way of acquiring much wisdom. Dr. Housden's style is pleasant and refreshing, and his arguments are well marshalled.

Dr. E. Lesné and Dr. L. de Gennes contribute a study on Rickets and Tetany[5] to the modern French series of monographs on paediatrics, which is agreeably international in its outlook and scope, and illustrates a movement in French paediatrics to break away from some of the traditions associated especially with the syphilitic origin of all ailments. With perhaps not quite enough stress upon the pioneer researches of English workers (and no mention at all of Gowland Hopkins) the whole story of the metabolic disturbances at the bottom of these two disorders is well told. In the discussion of the biochemistry of rickets more stress is laid upon the essential lowering of blood phosphorus than upon the lowering of blood calcium, a point upon which not all workers in this country would agree, but otherwise the various views and theories depending upon the biochemical findings are very fairly set out. English names have suffered sadly in their reproduction in this book, and no references to literature are given, apart from the name of the worker. A good selection of illustrative plates are bound together at the end of the book, and almost. but not quite, compensate for the absence of any index.

Miss Ruth Perkins has revised and enlarged her *Essentials of Paediatric Nursing*[6] for a second edition, and Dr. Joseph Brennemann, in an introduction, calls it "safe, sane, and sound," which rather saves the English reviewers from saying any more. As regards its value to nurses in this country it is doubtful whether it will help much. Certain points on diagnosis (tuberculin tests, Schick tests with beautiful coloured plates) are quite outside a nurse's province, and it is also regrettable that the nursing mother's laxative should be considered a matter for the nurse to decide, even assuming that it is necessary. The psychological aspects of children's nursing are well stressed.

BIRTH CONTROL

Books like *Control of Conception*,[7] by Drs. Robert Latou Dickinson and Louise Stevens Bryant, are now multiplying. They are mostly American, but it is not quite easy to understand for what class of person they are really intended. Ostensibly they are written for practising doctors—men and women adequately trained in anatomy and physiology and having a considerable experience of life. The facts in these fields of which such readers need to be reminded and the points which require to be stressed could, as a rule, be expressed in a scarcely greater number of lines than there are pages devoted to the setting out of the most elementary information about the structure and functions of the genitalia. Again, if, in books of this kind, we turn to the consideration of the eugenic results of sterilization, or to the racial or population effects of the various methods of birth control, we find such sections to be, in large measure, crude—results of a relatively narrow experience, imperfectly collated, being credited with far-reaching value without any very critical examination. If, however, it be accepted that books of this class, including the volume under review, must, in order to be considered complete, contain a large amount of information which in this country would be considered as appropriate only if addressed to the lay man or woman ignorant of anatomy, and must deal with certain important aspects of the subject in a way which can be satisfactory only to the unscientific or superficial thinker, yet the greater part of the present volume will be found to contain a very full, systematic, and detailed account of the various clinical methods which have been, or are now, in use for the prevention of conception, whether for the occasion, for a more prolonged but temporary period, or permanently. Particularly is this the case in respect of those methods which employ chemical spermicides, which are dealt with rather more fully than is usual. Thus the doctor who wishes to be better informed on these matters with a view to his actual practice will find much that may be useful to him, and throughout the work the statements as to the results of such procedures and the claims made for them are more reasonably set out than is sometimes the case.

Going beyond its title, the book contains a fairly complete account of the indications for, and methods of securing, early abortion. There is a summary of the American laws relating to birth control and to sterilization, and one of the most important and suggestive chapters is that relating to the administration of clinics and the widening outlook and future development of such centres. It is still too early for the ideal book on birth control to be written, but as an interim statement to be used with discretion this volume of Drs. Dickinson and Bryant performs a useful service.

BRUCELLA INFECTIONS

The literature of Brucella infections in man and animals is becoming so great that the serious attempt to digest it now made by Professor A. Alessandrini and Dr. M. Pacelli in their monograph entitled "A Social Danger: the Brucelloses," is to be welcomed.[8] Though the present volume contains a chapter describing the organisms of the Brucella group, its main purpose is to summarize the data relating to the public health significance of undulant fever in man and contagious abortion and other Brucella infections in animals. In addition, the authors have endeavoured to interpret the facts already acquired, and to form some conclusion as to the most promising lines of combating the spread of infection in the future. Most striking is their advocacy of vaccination of cattle, goats, and sheep with living organisms, since in many countries in which much attention has been paid to the subject this method is regarded as a retrograde step. Even though live vaccines may diminish the frequency of actual abortions in cows—and this is by no means satisfactorily proved—they cannot diminish the total amount of infection or serve to eliminate the disease. It is for this reason that in Canada, the United States of America, Germany, and this country opinion is rapidly crystallizing in favour of the eradication method with the concomitant building up of *abortus*-free herds. So far as the prevention of undulant fever in man is concerned, the authors recommend pasteurization or stassanization of infected milk, and the prophylactic inoculation with dead vaccines of persons who are peculiarly exposed to infection from animals.

[5] *Le Rachitisme et la Tetanie*. By Dr. Edmond Lesné and Dr. Lucien de Gennes. Monographies de Pediatrie et de Puériculture. Paris: Gauthier-Villars et Cie. 1932. (Pp. 175; 31 figures.)

[6] *Essentials of Paediatric Nursing*. By Ruth Alice Perkins, R.N., B.S. Second edition, revised and enlarged. Philadelphia: F. A. Davis Company. 1932. (Pp. 467; 55 figures, 6 coloured plates.)

[7] *Control of Conception*. By Robert Latou Dickinson and Louise Stevens Bryant. London: Baillière, Tindall and Cox. 1932. (Pp. xii + 290; 72 figures. 24s. net.)

[8] *Un Pericolo Sociale: Le Brucellosi*. By Professor A. Alessandrini and Dr. M. Pacelli. Rome: "Annali d'Igiene." 1932. (Pp. viii + 184; 10 figures. 24 lire.)

Notes on Books

In the September number of the *Annals of Medical History*[9] three out of the eight original articles are on subjects more or less connected with the circulation. Sir Wilmot Herringham's fourth instalment of the life and times of William Harvey deals first with the Royal College of Physicians and its attempts to control improper practice, and then with the Harvey family. The history of blood transfusion is traced by Dr. Leo Zimmerman and Dr. Katharine Howell; they describe and figure the "gravitator" of James Blundell of Guy's, whose portrait forms the frontispiece of this number. Dr. F. H. Pratt of Boston, Mass., in an extremely interesting article, shows that the nutritional value of the Thebesian vessels was first formulated by Emanuel Swedenborg, the Swedish physicist and engineer, who is widely known on account of his later theological writings. The history from the dawn of antiquity of madder (*Rubia tinctorum*) is sketched by Dr. G. R. Cameron, a Beit Memorial Fellow. In the first part of the life of William Shippen, jun., the pioneer of systematic teaching of anatomy and surgery in Philadelphia, Dr. W. S. Middleton recalls the anatomical drawings and models given to assist Shippen by John Fothergill, whose portrait appears on the cover of this number. Dr. W. F. Mengert of Philadelphia discusses the origin of the male midwife; Dr. Edgar Bick contributes a short note on the medical writings of Oliver Wendell Holmes; and Dr. J. H. Barach discourses on "Entelechy and scientific determinism in medicine."

Dorland's *American Illustrated Medical Dictionary*[10] is aptly described on the title-page as "A complete dictionary of the terms used in medicine, surgery, dentistry, pharmacy, chemistry, nursing, veterinary science, biology, medical biography, etc., with the pronunciation, derivation, and definition." Since its first appearance, thirty-two years ago, this valuable work of reference has been revised fifteen times. The sixteenth edition, like its predecessor, has undergone exhaustive revision by the editorial staff of the American Medical Association as well as by Dr. Newman Dorland and his immediate collaborator, Dr. E. C. L. Miller. Several hundred new words are included and many new illustrations. The terms proposed by the Committee on Nomenclature of the American Bacteriologic Society have been included and micro-organisms are described under those names. The terminology of physiotherapeutics has been brought into line with suggestions from the Council on Physical Therapy of the American Medical Association. The illustrations now number 941, and include for the first time 279 diminutive portraits of men "who have given their names to the terminology of medicine." This will no doubt make the dictionary more attractive to some readers, even though a number of comparatively small fry appear among the leviathans. Altogether the added matter has swollen "Dorland" to 1,494 pages—an increase of 66 over the last edition, published three years ago.

Applied Chemistry,[11] by Tinkler and Masters, is described in a subtitle as "a practical handbook for students of household science and public health." Since the University of London now grants a B.Sc. in household science, a book of this kind is a necessity for students intending to take that degree, and the authors of this volume are well acquainted with the nature and scope of the examination. Volume ii describes the chemical composition of foodstuffs, and gives methods of testing them for the presence of foreign matters and for evidence of their decomposition. Some attention is also given to the application of science to the art of cooking, but this section is one that deserves more extensive development. There is a very large field awaiting scientific exploration in this art. So far as it goes the instruction given may be regarded as a good foundation for further development. The description is in clear and simple language, and full bibliographical references are supplied.

The third volume of the forty-second series of *International Clinics*[12] is divided into six parts, dealing respectively with cases from Professor Lewellys F. Barker's clinics, pulmonary diseases, electrotherapy, physical and mechanical therapy, diseases of the heart and blood, and surgery. Of special interest are the papers on primary carcinoma of the lungs, by Dr. Henry Monroe Moses of Brooklyn; the therapeutic use of fever electrically induced, by Dr. William Bierman; hydrotherapy in the home, by Dr. Heinrich Wolf of New York; body mechanics in medicine, by Dr. K. G. Hansson of New York; the leukaemic problem, by Dr. Samuel Morison of Baltimore; and primary carcinoma of the vagina, by Drs. James A. Lehman and T. E. Jones of Cleveland.

[9] *Annals of Medical History*. New Series, vol. iv, No. 5, September, 1932. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc.; London: Baillière, Tindall and Cox. (Pp. 415–508, illustrated. Subscription in Great Britain, £2 10s. for volume of six numbers.)

[10] *The American Illustrated Medical Dictionary*. By W. A. Newman Dorland, M.D., F.A.C.S. Sixteenth edition, revised and enlarged. Philadelphia and London: W. B. Saunders Company. 1932. (Pp. 1,494. 35s. plain; with thumb index, 37s. 6d.)

[11] *Applied Chemistry. A Practical Handbook for Students of Household Science and Public Health*. By C. Kenneth Tinkler, D.Sc., F.I.C., and Helen Masters, B.Sc. Volume ii, *Foods*. Second edition, revised. London: Crosby Lockwood and Son. 1932. (Pp. xi + 284; 20 figures. 15s. net.)

[12] *International Clinics*. Edited by Henry W. Cattell, M.D. Vol. iii, forty-second series. Philadelphia and London: J. B. Lippincott Company. 1932. (Pp. viii + 309; illustrated. £2 10s. per set of four volumes; 12s. 6d. per volume.)

Preparations and Appliances

A PLIABLE RULE

Dr. David A. Herd (Liverpool) writes: Up to the present clinicians have found difficulty in the accurate measurement of lesions occurring on curved or obscured surfaces in the mouth, pharynx, and other sites which are inaccessible to the ordinary ruler. To facilitate such investigation I have designed a pliable rule as shown in the accompanying figure.

To determine the size of a lesion: bend pliable wire to desired curve, lay blunt point on further edge of growth, then slide outer tubing until in contact with nearer edge, and read the measurement off on the handle. Suitable finger-rings can be provided and also small slidable indicators for recording several measurements.

Constructed entirely of metal, it can be easily sterilized. This instrument is now being used successfully at the Manchester and District Radium Institute, and was made for me by Mr. Charles F. Thackray, Park Street, Leeds.

Paper Films in Radiography

Dr. E. J. H. Roth (London, W.) writes: Recent experiments have been carried out with a new sensitized paper to replace the *x*-ray film in radiological departments. A very satisfactory article has now been produced under the name of "Mimosa paper for *x*-ray diagnosis," marketed by Messrs. A. E. Dean and Co., Ltd., Leigh Place, Holborn. The paper is used in exactly the same way as an *x*-ray film, excepting that a few easily arranged modifications in exposure and dark-room technique have to be carried out. The resultant negative image is obtained in good black-and-white tones on paper, and is satisfactory enough for many routine cases, the exception being those demanding the finest detail.

In these days of national economy—and especially when the film account of a busy *x*-ray department must be one of considerable import to the committee of a hospital—it would seem desirable that publicity should be given to this ready form of economy. The cost of the paper is about half that of an ordinary film. A large number of films are often used in the progress of fractures and in the routine examinations of the alimentary tract. The paper may be used with success in chest cases demanding a number of controlling examinations during treatment, particularly in artificial pneumothorax therapy. After some practice it might be found that 80 per cent. of the work could be carried out with "paper films." Finally, this paper affords an easy method of filing with the case notes, and overcomes many of the dangers of storing celluloid.

HODGKIN'S DISCOVERY OF LYMPHO-GRANULOMA 100 YEARS AGO

BY

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[*Translated by* F. PARKES WEBER, M.D., F.R.C.P.]

It is now a hundred years since Thomas Hodgkin, in a masterly way and with astonishing clearness, endeavoured to separate out the definite disease which we now know as Hodgkin's disease or lymphogranuloma. The clinical accounts of that time naturally do not include all that we now know of the disease, but the description of his original seven cases shows that it was a chronic disease, often associated with fever, leading to cachexia, in which for the medical diagnosis the most important signs were extensive enlargement of lymph glands and often enormous enlargement of the spleen. The necropsy findings supported the idea of a single disease ; in all the cases there was great and widespread enlargement of lymph glands ; the enlarged glands were hard, sometimes of almost cartilaginous hardness, and were similar to each other in substance and free from necroses ; the spleen was generally very considerably enlarged, and contained whitish, hard, mostly large foci of a substance resembling that of the lymph glands. In several cases there were similar nodules in the liver.

In spite of the absence of microscopical examinations the essential features of lymphogranuloma were described, which I would classify in the following way:

1. Chronic febrile disease.

2. Widespread but not quite generalized lymphatic glandular enlargement without necroses (excepting in two cases with local complications).

3. Enlargement, often enormous, of the spleen, which contained peculiar foci or large nodules.

4. Similar nodules in the liver.

In regard to the differential diagnosis of lymphogranuloma, the following come into consideration:

(*a*) *Leukaemic Processes.*—These appear to be excluded in Hodgkin's cases, because in leukaemia nodules in the liver and spleen never occur, but only diffuse hyperplasias. In only one of Hodgkin's cases (Case 4) does the question of possible leukaemia—lymphadenosis—arise, as the glandular enlargement was unusually widespread and there was a meningeal infiltration. But I think the case must have been one of lymphogranuloma, as the cachexia showed that the disease had lasted a long while and there were many small white patches in the spleen, whilst in chronic lymphadenosis the hyperplasia is always diffuse.

(*b*) *Tuberculous Processes.*—These can be excluded, as in them great and widespread enlargement of lymph glands and spleen (tuberculous pseudoleukaemia) is certainly extremely rare, and doubtless never occurs in the absence of regressive changes (caseation) in some part or other. I know of no case in the whole literature of the subject in which a tuberculous pseudoleukaemia corresponded to the picture of Hodgkin's seven cases. It was the extent and size of the glandular and splenic enlargements that enabled Hodgkin to exclude tuberculosis in his cases. We know that in many cases of lymphogranuloma lard-like yellowish necroses occur, but such cases in Hodgkin's time would have been regarded as tuberculous, and his description of the new disease was therefore saved from confusion with tuberculous processes.

(*c*) *Syphilitic enlargements of spleen and lymphatic glands* are doubtless never as great as the enlargements described in Hodgkin's cases. For many years not a single case of tertiary syphilis has been described which, owing to the degree and extent of the glandular enlargements, could be termed "syphilitic pseudoleukaemia," and the older cases described under that heading are very doubtful ones, as I have explained in my textbook on *Blood Diseases*.

(*d*) *Glandular enlargements from sarcoma and carcinoma* can be certainly excluded in Hodgkin's cases, as in real tumour cases the spleen is not enlarged and contains no, or only very few, or only microscopic nodules.

We see, therefore, that Hodgkin's observations are of cases which, through much later intensive work, have been separated out as Sternberg's disease, lymphogranuloma, or malignant granuloma. The genius of Hodgkin is proved by the fact that by correct considerations he excluded diffuse hyperplasias in spleen and liver (that is, leukaemic processes), and also tuberculous processes, syphilitic processes, and changes due to malignant tumours. This was an extraordinary accomplishment in the state of knowledge one hundred years ago, and that we wish to commemorate to-day.

Later on, indeed, many authors did not follow Hodgkin's reasonings. They neglected the importance of the splenic enlargement that was present in all but one (Case 6) of Hodgkin's cases, and under "Hodgkin's disease" they included all kinds of lymphatic glandular enlargements.

Thus Hodgkin's clear conception of the disease was neglected, and the term "Hodgkin's disease" lost its significance and came to mean merely chronic lymphatic glandular enlargement of high degree. This was quite contrary to the conclusions of Hodgkin himself, who had wished out of the large number of enlargements of lymph glands and spleen to select this special group as a special disease.

Abstract of the seven cases communicated by Hodgkin in his paper "On some morbid appearances of the absorbent glands and spleen," *Medico-Chirurgical Transactions*, London, 1832, xvii, 68 (paper read on January 10th and 24th, 1832):

Case 1.—Boy, aged 9 years. Pains in back last nine months. Terminal ascites. Scrotal oedema. One brother had died recently of phthisis. Patient himself was cachectic. *Necropsy:* Old pleural adhesions (right), with recent pleuritis ; scarring at apex of right lung ; a few small nodules scattered in both lungs ; bronchial glands enlarged and indurated. Fresh sero-purulent peritonitis (probably secondary, after paracentesis) ; enlarged mesenteric glands (up to the size of pigeon's egg), of semi-cartilaginous hardness and streaked with black ; liver of normal size, containing a few white firm nodules somewhat larger than peas ; spleen enlarged, containing numerous nodules ; enlarged and indurated para-aortic and pelvic glands.

Case 2.—Boy, aged 10 years, ill for thirteen months, with considerable enlargement of the spleen, which diminished at times and then again increased. Glandular swellings on both sides of the neck. Terminal abdominal distension, scrotal oedema. *Necropsy:* Greatly enlarged lymph glands in neck, paratracheal, bronchial, and para-aortic, and also in pelvis. These glands were pale, poorly vascularized, of almost cartilaginous hardness, without any areas of softening. Old pleuritic adhesions. Ascites. Liver apparently normal. Spleen four times the normal size ; mammillated surface ; on section sprinkled with nodules of similar consistence to that of the lymph glands.

Case 3.—Man, about 30 years of age, admitted to hospital because of cachexia and terminal ascites. Previously treated for secondary syphilis with large quantities of mercury. Scrofulous-like ulcers in armpits and neck. *Necropsy:* Some calcification at the pulmonary apices ; pleural adhesions over right lung. A little ascites. Liver hardened, pale, and permeated with a hard white substance, partly diffuse, partly in pinhead-sized nodules. Spleen twice the normal size, and full of granules like early miliary tubercles, but if anything smaller. Some of the mesenteric glands enlarged and containing firm white material, so also some of the para-aortic, inguinal, axillary, and bronchial glands. The axillary glands were in a condition of suppuration, and partly ulcerated.

Case 4.—Man, about 50 years old, pale, not wasted, but of cachectic countenance. Clinically all the lymph glands were enlarged, especially in the axillae and neck, averaging a pigeon's egg in size. Abdomen distended. *Necropsy:* Circumscribed whitish infiltration of the pia mater. Lymphatic glands enlarged, white on section, of rather soft consistence, and having the appearance of morbid hypertrophy rather

than new growth. Large retroperitoneal lymph glands. Liver pale, large, and slightly granular. Spleen very large; on section lighter and more reddish than normal, with innumerable small white spots, without nodules. Heart hypertrophied.

Case 5.—Middle-aged man, who had been ill for a long while, especially with chest troubles. In the hospital there were swollen cervical glands. *Necropsy:* Considerable enlargement of cervical and submandibular glands. Part of one lung was airless and firm, as in white hepatization. Fresh inflammation of one pleura. The liver was more than seven pounds in weight, not much altered on section, like a fatty liver, of dark green to yellowish colour. Spleen four or five times the normal size, firmer than usual, in some parts containing little specks of rather soft consistence. Great enlargement of retroperitoneal glands. Some of the abdominal glands showed ecchymoses. The thoracic duct contained blood.

Case 6.—Man, about 50 years old, fell ill about two years previously with fever; enlargement of the glands on both sides (one side before the other) of the neck, then in the axillae and groins; pallor and ascites. *Necropsy:* Cervical, axillary, and para-aortic glands greatly enlarged; those on the left side of the neck and in the left axilla were the largest; all these glands were of similar structure, without softening, pale, covered by soft membrane; some were of semi-cartilaginous hardness. Liver rather small, with an irregular and uneven surface, in which there were two or three white nodules. Spleen of moderate size, and free from adventitious deposit. Omentum corrugated. Yellowish ascitic fluid in peritoneum.

Case 7.—Specially communicated under the title, "Cancer cerebriformis of the lymphatic glands and of the spleen." Man, about 30 to 40 years of age, who for three or four months had had enlargement of submandibular, cervical, axillary, and inguinal glands. Died in Paris in a few days from difficulty in swallowing. *Necropsy:* Masses of enlarged glands from chin to axilla, varying in size and degree of vascularity, each of them enclosed in a capsule; the contents were "brain-like." Similarly altered inguinal and para-aortic glands. Behind the stomach a retroperitoneal conglomerate glandular mass of the size of an adult's head, in the middle of which was a haemorrhage. The vena cava inferior and aorta passed through this mass. Similar alteration in the tonsils. Spleen full of nodules of the brain-like substance, containing fine blood vessels. Apparently there was nothing special in the thorax (not seen by Dr. Hodgkin himself), nor in any other organs.

IMPERIAL CANCER RESEARCH FUND

ANNUAL REPORT

There will be no annual meeting of the Imperial Cancer Research Fund this year. The thirtieth annual report of the Fund, published this week, was submitted to and adopted by the Executive Committee at a meeting held on November 2nd, and has been approved by the president, the Duke of Bedford.

Tribute is paid in the report to the services of Sir Frederic Andrewes, representative of the Royal Society, who died earlier in the year: Professor M. Greenwood has been appointed as his successor. Another severe loss has been that of Sir William Watson Cheyne. Sir Humphry Rolleston has been re-elected as the Royal College of Physicians member, and is chairman of the Executive Committee. Sir Percy Sargent and Mr. Wilfred Trotter represent the Royal College of Surgeons, while Dr. F. C. Minett has been appointed a member of the Pathological and Publications Subcommittee in place of Sir John McFadyean. Dr. F. R. Selbie and Dr. A. F. Watson have been appointed members of the scientific staff. Dr. Petro Jonescu of Jassy, Professor F. Pentimalli of Rome, and Dr. T. Cherry of Melbourne have been given facilities for voluntary work in the laboratories. Sir Frederick Hallett, who has been compelled by illness to resign his post as secretary, has been granted a pension. During the financial year ended June 24th, 1932, the treasurers report that expenditure amounted to a little over £14,000. The present state of finance has not allowed an increase in the scientific staff, though it is pointed out that the requirements of the work are as great now as they ever have been. A capital sum of £20,000 is promised by the executors of the late Miss E. Wills-Allen for the establishment of a memorial fellowship. The Royal Colleges of Physicians and Surgeons have granted a further lease of the laboratories now occupied by the Fund for a period of seven years, on payment of a premium of £3,700.

In his director's report, Dr. J. A. Murray refers to the work already published in the tenth scientific report (see *Journal*, October 22nd, p. 766), the preparation of which occupied most of the time of the staff during the past year. Publications from the laboratories during the year which are not incorporated in that report comprise two papers by Professor Chambers and Dr. Ludford on micro-dissection and micro-injection of normal and cancer cells grown *in vitro*, Dr. Cramer's survey on the comparative study of cancer, and Dr. H. G. Crabtree's critical essay. A summary of the latter, which occupies the remainder of the annual report, is given below.

Metabolism of the Cancer Cell

The fundamental discovery of Professor Warburg in 1923 created a new outlook in cancer research. The cancer cell was shown to behave abnormally in the essential chemistry of its life processes. Every ten hours it produced an amount of lactic acid equal to its own dry weight, the energy freed as a result of this process being available for the cancer cell's activities. The cancer cell uses the two processes of respiration and glycolysis, and therein lies its distinction from the great majority of normal body cells in higher organisms. Using Warburg's technique, with thin slices of surviving tissue placed in small saline-containing glass vessels attached to manometers, it is now possible to measure respiration and aerobic and anaerobic glycolysis simultaneously. Warburg has, in fact, elaborated methods for the study of tissue metabolism which are quite new and of great ingenuity.

Cancer is an exhibition of an unlimited, incoordinated growth, which implies a constant storage of chemical energy. Respiration and glycolysis constitute the primary energy-yielding reactions, and it was on these that Warburg focused his attention. His cancer work arose in the course of physiological studies of the oxidation processes in sea-urchins' eggs. At the moment of fertilization the respiration increased to six times the value found in unfertilized, quiescent eggs—that is, the transition from "resting" to development was shown in a tremendous acceleration of the reactions supplying energy to the cell. The cancer process is essentially a transition from normal "resting" tissue to rapidly proliferating tissue, and a similar acceleration of respiration was expected. When tested experimentally, however, this proved not to be the case. Even when various substances of importance in nutrition were placed at its disposal no increase in respiration occurred in the cell, but its glycolysing powers were discovered. Meyerhof had already shown an empirical relationship between the formation of lactic acid and the consumption of oxygen. In the first tumours studied by Warburg an exactly similar relationship was found. The discovery of high glycolysis in the cancer cell was naturally followed by a comparison of its metabolism with that of other rapidly growing tissues. Embryonic cells showed as high anaerobic glycolysis as the cancer cell, but in the presence of oxygen glycolysis completely disappeared. In these normal growing cells the vital oxidations effectively prevent the accumulation of lactic acid. Why, then, does glycolysis persist in cancer cells when ample oxygen is available? The conclusion was inevitable that the respiration by tumours was too small to prevent aerobic glycolysis. This idea prevailed until the author (Dr. Crabtree) studied a whole range of mouse and rat tumours, and found that the conception of tumour respiration being too small in all cases proved untenable. In tumour cells two types of defective respiration are

recognized: (1) it may be too small, though effective; (2) it may be large, but ineffective. Respiration and glycolysis are visualized as related reactions, aerobic glycolysis being regarded as the resultant of the interplay of respiration and anaerobic glycolysis.

Until Warburg's investigations it was not generally recognized that in an oxygen-free environment the highly differentiated tissues of higher organisms retained, to some extent, the power analogous to that of the cancer cell of splitting sugar. Young growing cells do this at a very high rate, adult cells to a much less degree, but the natural environment of healthy cells in the body is highly oxygenated, and therefore this latent power is not exhibited. It arises only when there is a lack of oxygen or the respiratory organism in the cell is in some way damaged. It can be regarded as a defensive mechanism, but of only temporary value. Thus a new hypothesis for the origin of cancer was suggested. It was assumed that the well-known cancer-producing agents—tar, radiation, bacteria, parasites, chemicals—though of such variety and apparently unrelated, all acted by creating a localized damaging, which resulted in an oxygen deficiency. But why should normal cells, subjected to conditions of oxygen-lack, redevelop their lost capacity for rapid growth? There is no proof that the acquisition of a new metabolic habit induces cell division which is endlessly repeated. The reverse hypothesis—that the peculiar metabolism of the cancer cell is not the cause but the chemical manifestation of the cancer process—is equally tenable, but equally unproven. The value of this hypothesis is not lessened because at present it does not explain the whole cancer problem.

Metabolism in Other Tissues

On the basis of the observed differences in the metabolism of the cancer tissue and other normal, resting, and growing tissues, Warburg has made several attempts at classification, all having the same leading idea—to stress the exceptional character and magnitude of cancer metabolism. It is now clear that any abnormally proliferating tissue, cancerous or non-cancerous, exhibits the peculiarities of metabolism which have been found to be characteristic of cancer.

To demonstrate the present position a brief summary of the essential metabolic features of a large range of normal and pathological tissues is given by Dr. Crabtree:

(*a*) The following normal tissues, comprising the great majority, have their own characteristic respiration, but *little or no aerobic glycolysis*. Anaerobically they all glycolyse in varying degrees, roughly in proportion to their rate of growth. They are: embryonic tissue, endocrine glands, testes, ovary, placenta, chorion, liver, kidney, spermatozoa, white bone marrow cells, blood platelets, resting muscle, pancreas, thymus, spleen, brain cortex.

(*b*) In early embryonic life the lens of the eye exhibits high respiration and aerobic and anaerobic glycolysis; but all these fall progressively as development proceeds, the adult lens showing a negligible metabolism.

(*c*) Whatever the medium used in the study of the retina it has always shown a metabolism of the cancer type, and of exceptional magnitude.

(*d*) Earlier measurements of leucocytes showed a metabolism very similar to that of the cancer cell.

(*e*) Pathological overgrowths, arising in response to a localized aggregation of bacteria or viruses—for example, warts, vaccinia lesions, and tuberculous lymph glands. All these show respiration and aerobic and anaerobic glycolysis of the same order of magnitude as in tumour tissue.

(*f*) Regenerating tissue, arising during healing of wounds, possesses low but definite aerobic glycolysis.

(*g*) In benign tumours metabolism is similar in kind to that of malignant tumours.

(*h*) Malignant tumours. Whatever the site, the predisposing cause, the species of the host, all spontaneous and transplanted tumours exhibit a high aerobic and anaerobic glycolysis, and a respiration varying within wide limits.

One cannot distinguish cancer tissue quantitatively from all other tissues on a metabolic basis. Can any generalization concerning metabolic types be made of a *qualititative* nature? Warburg has tried to answer this question. He says: "If the respiration of a growing cell is disturbed, as a rule the cell dies. If it does not die, a tumour cell results." The above list contains many examples which would seem to contradict such a view, but Warburg recognizes two factors operative in causing the appearance of aerobic glycolysis in all the non-cancerous types of tissue mentioned, which differentiate them from tumour tissue—namely, (*a*) injurious experimental conditions used in their study, and (*b*) the biological conditions of the cells studied. If his various hypotheses are correct, the sole difference between cancer and other pathological tissues is the permanent nature of the damaged respiration in the cancer cell. Its fundamental abnormality is passed on indefinitely through countless cell generations. Aerobic glycolysis, the manifestation of damaged respiration, does not lead to the cancer cell's death, but provides a useful source of energy in aiding its preservation. It is paradoxical that a perpetuated defect of the most important biochemical mechanism in a cell should make for its survival.

Destruction of Cancer Cells

Several attempts have been made, on the basis of their peculiar metabolism, to kill cancer cells in the body. Transplantable tumours have mainly been used for experiment, though certain methods have been applied therapeutically to cancer patients. The underlying principle has been to deprive the cancer cells of their supply of glucose or to asphyxiate them through lack of oxygen. Since glycolysis is the splitting of the blood sugar, the concentration of this was lowered by the administration of insulin. Meanwhile oxidation processes continued. No effect was produced on the tumour, as might have been anticipated, for glycolysis in tumours provides a maximum of only 30 per cent. of the total energy used. Warburg tried to inhibit tumour growth by keeping rats bearing transplantable tumours for forty hours in an atmosphere containing the minimum amount of oxygen compatible with continuing life. The central mass of the tumour was killed by this treatment, but cells at the periphery survived. Fischer used the reverse process, keeping animals with transplantable tumours in pure oxygen. He had previously observed that cancer cells cultured *in vitro* were killed by increasing the tension of oxygen. Some tumours disappeared under this treatment—particularly in the early days after transplantation—but intervening pneumonia and ulceration were frequent causes of death. Cramer and Campbell studied the effect of less extreme variations in the oxygen tension of the atmosphere. Prolonged exposures of tumour-bearing animals in an atmosphere containing about half the percentage of oxygen found in air resulted in a greatly diminished rate of growth and extensive necrosis of the tumours. Yet the normal body tissues reacted unfavourably to even this mild treatment, and as a "cure" for cancer the method was valueless.

All these simple and crude procedures have been concerned with attempts to starve the cancer cell to death. The simultaneous adverse effects on the animal itself are readily apparent. The more vulnerable condition of transplanted tumours, with their poor vascular supply and less strict association with the host than is found in spontaneous tumours, would in itself account for what measure of success has been attained. The fact that Warburg's work has not solved the whole cancer problem in no way detracts from its value, for it has stimulated new ways of thinking, and a new way of visualizing the cancer process is now possible. The basic facts of his discoveries are of prime importance. A wide field of cell physiology has been opened up and valuable methods of investigation evolved. Examples of the practical application of these methods could be mentioned. They are based on the assumption that the intensity of the metabolism of a cell is an index of its vitality. Since the possibility of survival is dependent on a constant supply of useful energy, this assumption seems valid. In testing the value of suggested therapeutic reagents or serums which are claimed to affect the cancer cell adversely, these methods are a valuable adjunct to direct animal experiments.

British Medical Journal

SATURDAY, NOVEMBER 19th, 1932

PATHOGENESIS OF TUBERCULOSIS

The discussion on bovine tuberculosis so ably opened by Dr. A. S. Griffith at the Centenary Meeting of the British Medical Association in July went far to crystallize our views on, and gave us a clear idea of, the bacteriologist's opinion of the position and importance of tuberculosis of bovine origin in man. As a rider to this, Dr. Blacklock's monograph[1] on tuberculous disease in children has been published by the Medical Research Council at an opportune moment, for it adds many concrete facts to our knowledge of the pathogenesis of tuberculosis, both human and bovine. In a correlation of the results of this research with other modern publications on tuberculosis in children due attention must be paid, as the author insists, to the choice of the material for study. In this case it consisted of 1,800 consecutive post-mortem examinations at the Royal Hospital for Sick Children at Glasgow, where the majority of the patients are acutely rather than chronically ill. The conclusions reached are therefore not applicable to the general child population, and much less to the healthy child population. Further, it is to be noted that as a rule the children came from the poorest homes. Taking the last fact into consideration it is not surprising that out of the 1,800 consecutive deaths the percentage due to tuberculosis was rather higher than that obtaining in the whole of Great Britain. One point stressed by Dr. Griffith and several speakers who followed him was that the bovine bacillus was not, as is popularly supposed, of low virulence to man, and thus to be despised. Although Dr. Blacklock's results support this contention, they also show that the bovine is definitely less virulent than the human bacillus so far as generalization of the disease is concerned. Nevertheless, it appears that abdominal tuberculosis of bovine origin may easily spread direct from the mesenteric to the thoracic lymphatic glands. In this situation it is not only well on its way to the general circulation, but from its localization is potentially dangerous (perforation of a bronchus, etc., may occur). The activities of the bovine bacillus, therefore, should not be underestimated. The spread of the primary infection along the lymphatic system leading to secondary disease of the lungs after reaching the general circulation helps to explain the greater frequency of pulmonary tuberculosis of bovine origin in Scotland, where bovine infection is relatively high. It is therefore reasonable and right that Glasgow, though the purity of its milk supply compares favourably with that of other towns and is definitely better than that of its surrounding country districts, should still be concerned in obtaining further purity. Dr. Blacklock's figures indicate that a very appreciable proportion of fatal or incapacitating childhood tuberculosis can be eradicated by energetic action in this direction.

From Dr. Blacklock's detailed and interesting account of the lymphatic spread in the human body from the primary focus it appears that the path of the infection is by preference always centripetal, but may at the same time be definitely centrifugal. He suggests that the first secondary infections in the lung are always haematogenous, though with the advanced disease found in many of the cases this could not always be ascertained with precision. This will be welcomed as valuable evidence by those who hold that all manifestations of tuberculosis in later life are endogenous in origin. In this connexion the differentiation, on their naked-eye and histological characteristics, between acute and subacute miliary tubercles (the latter being surrounded by a definite cellular reaction) is an important distinction. The subacute miliary tubercle, whose haematogenous origin was made more certain by the presence of tubercles in the intima of the pulmonary vein in every case in which they occurred, must henceforward become a distinct and important pathological entity. When the Assmann focus (or "early infiltration") of the adult is due to endogenous infection it should start as a collection of these subacute miliary tubercles, with their surrounding zone of tissue reaction. But when it is due to exogenous infection, presumably air-borne, it should start—as it is said to do—as a patch of bronchopneumonia. Direct pathological proof of this point is difficult to get. *X*-ray evidence is not sufficiently precise. Such a difference of origin, however, might explain the different behaviour and after-history of these lesions in man. Since the infection always follows a centripetal lymphatic course and may reach the great veins near the heart, it is clear that, wherever the primary focus, the risk of secondary disease of haematogenous origin is always present. The danger then must depend on the proximity of the primary focus to the thoracic lymph glands, and, when this is distant, on the virulence and spreading power of the infecting bacillus. Once the bacilli reach the blood stream pulmonary tuberculosis of haematogenous origin, perhaps with isolated subacute miliary tubercles as a starting-point, is the most probable secondary manifestation. (This work should provide enough evidence to remove the misconception that tuberculosis commonly spreads from the tracheo-bronchial glands directly into the lung, causing hilum tuberculosis.)

The results of Dr. Blacklock's research give strong independent support to Ranke's hypothesis of the three-stage reaction of the human body to tuberculous infection, and should serve to bring such hypothetical considerations more into the arena of practice. Apart from generalized miliary disease of the non-resistant, pulmonary lesions are the most dangerous manifestations of tuberculosis. The primary lung focus tends to heal: the first secondary manifestation in the lungs is haematogenous and does not tend to heal. Bacillaemia

[1] Medical Research Council. Special Report Series, No. 172. Tuberculous Disease in Children: Its Pathology and Bacteriology. By John W. S. Blacklock. London: H.M. Stationery Office. 1932. (3s. net.)

is more likely to occur, or perhaps can only occur, if the thoracic lymph glands are involved, and therefore it is the degree and extent of the secondary thoracic lymph gland involvement which, other things being equal, decides the individual's fate. The diagnosis of tuberculous tracheo-bronchial glands has always been a clinical difficulty. Modern *x*-ray technique cannot with any certainty tell us the state of these glands unless the disease is gross or the glands are definitely calcified. But the detection of frank tracheo-bronchial gland tuberculosis is so important in the prevention of pulmonary tuberculosis of endogenous origin that it must be well worth while to make a concentrated effort to improve our methods of diagnosing disease of these inconveniently placed organs.

ECONOMIC DEPRESSION AND THE PUBLIC HEALTH

The Health Organization of the League of Nations has undertaken an inquiry into the effect of the economic depression on the public health.[1] It points out that the actual number of unemployed workers represents only a small fraction of the population affected, and that the number of persons affected directly or indirectly in the whole world probably amounts to fifty or sixty millions. Moreover, the partially unemployed and even those who are employed often find their conditions of life worsened in the same way as those of the unemployed themselves. For instance, many miners in Westphalia have been working on short time for years, while unskilled employees in the metallurgical industry, although working eight hours a day, find themselves, owing to the low rate of wages, in a position comparable to that of the unemployed man drawing benefit or public relief. The economic depression has also reduced the income of nearly all the professions and lowered the standard of living of the masses. An analysis of the mortality statistics shows that death rates have not risen during the years of depression, and that the only increase is among elderly persons in certain towns. The tuberculosis mortality has also declined, and the tuberculosis morbidity does not show any increase. The Organization quotes figures collected by Tyszka from the German Statistisches Reichsamt to show some evidence of under-nutrition during unemployment among families at the lower income level. The average calorie intake has been shown to drop by about 450 a day, and since these statistics were compiled the financial position of the unemployed has become steadily worse. Tyszka admits the justness of Lehmann's phrase "a hidden famine." Moreover, Lehmann calculates that the unemployed must spend their entire income on food, and have nothing over for other necessaries. Figures compiled by Cathcart and Murray from a small number of unemployed families in Cardiff and Reading do not indicate a food shortage, and show that the housewives were able to spend 7s. and 6s. 3¾d. respectively a week on food, but at the present level of unemployment this represents 77 and 55 per cent. of the total income. Careless and ill-managed families and city families with a high rent may, according to the Organization, suffer from food shortage. In Germany and Central Europe the quality of the food purchased is probably much lower than in times of prosperity, but whereas the unemployed man is said to spend long hours of the day asleep, his wife is, if anything, more heavily occupied, and the effects of malnutrition are likely to be felt earlier by her than by her husband.

The Public Health Office of the German Reich points out in a recent memorandum that unemployment does not always lead to an immediate decline in public health, but that after a certain lapse of time a definite gradual decline makes itself felt and a serious danger to public health arises. Since the autumn of 1931 a material deterioration in the state of nourishment of school children has been observed in all the administrative districts of Prussia, and an increase in anaemia, infestation by parasites, impetigo, dental decay, and nervous conditions leading to rapid fatigue and inattention. Child welfare centres report that rickets and tuberculosis have increased in the last two or three years, and rest homes and sanatoriums for consumptives in Central Germany record that both children and adults are strikingly debilitated on admission. In South Wales and Durham, on the other hand, unemployment has not produced the harmful effects upon the health of children and young people that might have been anticipated. Observations in Germany, the United States, and this country have established that serious psychological disturbances also accompany unemployment. The fear of losing his job, the disappointment at failing to get another, the despair at being not able to find work within a reasonable time, gradually undermine a man's mental balance, and lack of occupation has a particularly bad effect upon the adolescent, who finds that his way to what should be his life's work is barred by unsurmountable obstacles. In Germany the conditions are almost certainly much worse.

The Organization has contented itself with merely outlining the present situation and providing a basis for discussion. It has refrained from any conclusions, but promises to gather fresh information and to examine the various problems presented to see whether any of them can be dealt with by concerted international action.

[1] Quarterly Bulletin of the Health Organization of the League of Nations. Volume i, No. 3, September, 1932. London: Allen and Unwin. (2s.)

THE POST-GRADUATE HOSPITAL AND SCHOOL

In our "Medical Notes in Parliament" this week (p. 949) we report a question and answer of considerable importance, the significance of which seems to have passed unnoticed in the daily press. The question was a tendentious one: whether, in view of the need for economy and the cuts which had been made, and in view of certain activities of some London medical schools it was now intended to proceed with the foundation of the Post-Graduate Medical School at Hammersmith, and, if so, what financial grant was to be made? The Minister of Health replied that the answer

to the first part of the question was in the affirmative, and that the maximum amount to be provided by the Exchequer was £100,000. Thus the Government has, after full consideration, come to a decision on this matter which will give very great and general satisfaction. In a leading article in the *Journal* of October 1st (p. 638) we set out in brief the history of this project and gave the main reasons, of a very weighty character, why it should be carried through. We drew attention to the rumour that efforts were being made in some quarters to secure its abandonment or indefinite postponement, and pointed out the seriousness of the situation, and how disastrous it would be if such influences were successful. We have reason to believe that what we then said, and the stand which this *Journal* took on behalf of the medical profession and in the interests of medical education with London as its world centre, exercised an influence in determining the decision arrived at ; and it is a great satisfaction to be able to congratulate the Government upon its foresight and wisdom. All those concerned should now unite in carrying the proposal forward to an early and successful completion.

THE HOSPITAL ALMONER

Among the executive officers of our hospitals, as distinct from the professional medical staff, there is none more important than the hospital almoner. The office is a new one, albeit the name " almoner " is of considerable antiquity. In the earliest records of two of London's oldest medical charities—St. Bartholomew's and St. Thomas's Hospitals—there were almoners who had the duty of examining all persons brought to the hospital and of admitting them at discretion. In later years the almoners of St. Bartholomew's became the " house committee " of the hospital. When Sir Charles Loch was secretary of the Charity Organization Society he realized the urgent demand for some kind of social service within the walls of the hospital, and suggested the need of a " charitable assessor or co-operator . . . well instructed as to all forms of relief other than medical. . . . His office should be to supplement the work of the medical officer by obtaining the general assistance without which medical relief will often fail of its purpose." It was at the instance of Sir Charles that in 1895 the first almoner was appointed at the Royal Free Hospital. Hospital abuse was giving rise to much uneasiness at the time, and the possibility of checking this by means of almoners appears to have aided the adoption of the proposal, though its author had a much wider aim—now realized in the office of the up-to-date almoner. The duties of the first almoner were: (1) to prevent abuse of the hospital by persons able to pay for medical treatment ; (2) to refer destitute patients, and those already in receipt of parish relief, to the Poor Law authorities ; and (3) to recommend suitable persons to join provident dispensaries. To-day there are few hospitals of good repute that do not possess a well-staffed almoner's department. The threefold duties, though still performed, are but a small part of the work done. To appreciate the activities of the modern almoner we commend a little book, *The Hospital Almoner*,[1] just published by a committee of the Hospital Almoners Association. Contrary to what one might expect this is no dry-as-dust bureaucratic description of an office but a thoroughly human document ; it is even entertaining, as indeed are most human documents. It begins with a historical sketch of the birth of the British hospital system: the slow growth of the hospitals founded by pious benefactors, the abuse of these early foundations, and the fall of most of them with the fall of the monasteries ; the sudden development of voluntary hospitals throughout the country—many of them founded by medical practitioners—in the eighteenth and nineteenth centuries ; the late incoming of statutory hospitals, and the mushroom growth of clinics of all sorts and kinds. Other chapters deal with the early days of the almoner's work, showing the rapid evolution to its present wide scope, and the diversity of the work in general and special hospitals, while one gives an illuminating account of a day in an almoner's office. The hospital doctor has learned to bless the work of the almoner. If he wishes to know the private circumstances of a patient, the almoner will tell him. If he wants to secure some form of outside care, the almoner will tell him what is available and how it can be obtained, and will see that it is obtained. If special instruments or a stay at a convalescent home are needed, the almoner will arrange for both. If there are benefits that can be secured under the Health Insurance Acts, the almoner will know of them. If the doctor wishes to follow up special cases the almoner will arrange that for him too. To the family doctor the almoner is no less valuable, for her office is rapidly becoming a place where he may inquire about everything that relates to institutional treatment. The almoner's department bids fair to convert what were once isolated hospitals, through whose doors passed a procession of unknown claimants for medical relief, into part of a vast social service, better organized and giving improved service with each year of experience. The unknown authors of *The Hospital Almoner* have done their work well, and this little book will surely commend the office of almoner to those who consider they are in some sense their brother's keeper. We can imagine no account of this type of social work more likely to bring recruits for training as hospital almoners of the future.

[1] *The Hospital Almoner.* A Brief Study of Hospital Social Service in Great Britain. The Institute of Hospital Almoners, Tavistock House (North), Tavistock Square, London, W.C.1. 1932. (Pp. 77. 2s., or 3s. in stiff covers.)

TESTS OF INDUSTRIAL SKILL

In a report of the Industrial Health Research Board, describing an experimental study of certain forms of manual dexterity, Mr. J. N. Langdon[1] reviews the literature relating to earlier investigations on motor testing, and shows that it for the most part indicated that the performances exhibited in various manual tests were largely independent of one another, and did not possess a common factor corresponding to the general factor of mental ability measured by intelligence tests, which is now considered to be fairly well established. Such a lack of a common factor would render it very difficult to offer adequate vocational guidance to young persons entering industry, and Mr. Langdon is therefore to be congratulated on his success in finding, as the result of a careful and laborious investigation, that

[1] Medical Research Council. Industrial Health Research Board. *An Experimental Study of Certain Forms of Manual Dexterity.* By J. N. Langdon. Report No. 66. London: H.M. Stationery Office. 1932. (1s. net.)

a common factor *does* exist in all probability, though the evidence in its favour is not so strong as that for a general intelligence factor. When groups of boys and girls, aged about 16, were tried on a number of laboratory manual tests, such as inserting matches in holes, placing rings on a rod, knotting string, threading beads, screwing nuts on bolts, and tapping a counter, an average intercorrelation of 0.4 was observed in one series, and of 0.3 to 0.7 in another series. When some of the subjects were tested in addition on certain industrial occupations, such as packing needles, making artificial flies for angling, wrapping toffee and soap, it was found that there was an average correlation of 0.4 between the manual operations and the group of dexterity tests. When manual operations were correlated with isolated manual dexterity tests an average correlation of 0.6 was found, so that these tests, taken as a whole, suggest strongly that the measurement of motor function may be of practical use in vocational guidance. It is realized that much further investigation must be undertaken, particularly with regard to devising more satisfactory tests. It is of interest in this connexion to recall the findings of an earlier survey undertaken by the Industrial Health Research Board.[1] The report in question deals with the methods used in testing suitability for skilled industrial operations. The authors arrive at the interesting conclusion that "it is not permissible to deduce the total capacity required for an occupation from the presence of a series of isolated capacities, such as sureness of eye, sensitiveness of touch, etc., by fitting the single elements together like a piece of mosaic." That the individual psycho-physical functions called into play by a series of tests should be such as are involved in the actual practice of the occupation is not regarded as essential. The important thing, it is suggested, is that the tests should bear a close general similarity to the work in demanding activities which are numerous, varied, and complex; and stress is wisely laid on the desirability of systematic observation of the subject's performance of such activities.

[1] Medical Research Council. Industrial Health Research Board. *A Classification of Vocational Tests of Dexterity*. By Amalie E. Weiss Long and T. H. Pear. Report No. 64. London: H.M. Stationery Office. 1932. (1s. 3d. net.)

ELECTRIC LIGHT AND THE HUMAN EYE

Electric lighting has made vast strides in the last few years, especially indoors, and many systems of concealed or diffused lighting have been brought to a high state of technical perfection. Unfortunately, however, the effectiveness of modern practice, as distinguished from its efficiency in terms of illumination divided by cost, rests upon an insecure foundation. Mr. A. B. Read, in a paper read before the Institution of Electrical Engineers on November 3rd, pointed out the often unrecognized fact that the illuminating engineer's real master is the human eye. No system is really satisfactory, he said, unless the eyes of those who have to live and work under it are enabled to do their tasks satisfactorily and with the minimum of fatigue. So, too, the most pleasing and aesthetically satisfying system of illumination fails if the light it provides is inadequate or if the eye cannot by its means work efficiently and without strain or discomfort. Many researches have been carried out, mostly by physicists or engineers with little appreciation of the psychological factors involved, and their results have not unnaturally been almost as various as the tests they employ. The only fact on which they agree is that a given task is much easier when the illumination is high than when it is low—a truth to establish which hardly needs arduous and expensive research. The human body, as Mr. Read pointed out, is wonderfully adaptable, and in its reaction to an unusual demand draws upon a large reserve of vitality. Sometimes it draws upon this reserve beyond the needs of the occasion, and the worker's performance may improve when the conditions are more exacting. An attempt has been made to assess the effect of different factors by a simple qualitative comparison of two lighting systems differing in some particular effect. The comparison is made by a large number of observers, and their opinions are weighed and analysed for any more or less general agreement. One of the chief exponents of this method is Dr. W. S. Styles,[1] whose recent researches have been chiefly concerned with the assessment of glare. This, however, is only one factor. Contrast, shade, and colour profoundly affect not only the general appearance, but also the practical value of a system. Thus it is generally recognized now to be bad practice to cast all the light downwards on to the working plane by means of opaque shades or reflectors, leaving the upper part of the interior in complete darkness. The reason is that when a worker in such a room directs his eyes upwards they speedily become adapted to a very low order of brightness, and, therefore, when he directs them again to his work, they have at once to adapt over a very wide range. If this alternation occurs too often he experiences discomfort, and experiments have shown that the efficiency of performance of the eyes under these conditions is definitely lower than when there is little variation in the brightness of different parts of the room. Mr. Read emphasized that completely uniform brightness, or even an approximately uniform brightness, in the field of view is almost equally undesirable, as it gives a flat effect which is most tiring. The various objects in a room have, however, very diverse factors of reflection, and uniformity is unlikely. Another argument against the wholly indirect system is that complete absence of shadow is as unwelcome as very sharply defined and dense shadows. In sewing work, for example, the discrimination of individual threads and other fine detail in a self-coloured material depends almost entirely on shadows, and the illumination of the working plane seems lower in a shadowless lighting system than when there is a noticeable direct component. The colour factor in light is more important than it appears. For most purposes some form of white light is undoubtedly the most suitable, but "white light" varies considerably. Finally, a point which Mr. Read did not mention, but which was put forward by Mr. H. T. Young in discussion, was that the large majority of the inhabitants of this country, and probably of most civilized countries, have more or less defective sight. Whereas the lighting engineer is inclined to judge light by the effect on a normal eye, he should for practical purposes make allowance for a certain degree of defect; and here the help of ophthalmology is needed.

[1] *Proceedings of the International Illumination Congress*, 1931, i, 576.

HIGH CARBOHYDRATE, LOW FAT DIET FOR DIABETIC CHILDREN

Joslin has stated that diabetes in children has increased two- or three-fold in a decade, and any method of treatment which will give increased tolerance for carbohydrates and diminish the frequency of injections of insulin is to be welcomed. In a recent paper[1] Dr. H. C. Jamieson describes the application of the "high carbohydrate, low fat" system to a series of diabetic children with good results. It will be remembered that this paradoxical diet is based upon two theories: that a liver well charged with glycogen brings about an increased sugar tolerance, and that if the pancreas is rested its power diminishes. Whatever may be the truth of such theories the fact remains that in practice the high carbohydrate, low fat diet is easy to manage, approximates closely to a normal diet, and carries with it little risk of ketosis. The important foods used are bread, cereals, vegetables, a wide range of fruits, and lean meat. Milk is allowed as a beverage, and takes the place of cream for tea and coffee with the older children. Butter in small quantities is the only fat used. Pork in any form is eliminated, and so is mutton. Eggs are used only in limited numbers because of their fat and high cholesterol content. Bulky, "residue-filling" articles of diet, such as bran or cellulose, are dispensed with altogether, so that the "pot belly" type of diabetic child disappears from this system. Dr. Jamieson does not believe it is necessary to keep such children under weight. He places each patient on a standard diet when first seen unless complications or the severity of the condition require special treatment. A child will usually go straight on to a diet of 100 grams of carbohydrate, 60 grams of protein, and 40 grams of fat. Sugar in the urine at first increases and then gets less, and on its disappearance carbohydrate is added at a rate of approximately 25 grams daily, with such increase in protein as the suitability of the food necessitates. The fat remains at a constant low level. If the urine does not become sugar-free at first, or persistently contains sugar after some additions to the diet before a sufficient total caloric requirement has been reached, then insulin is used. Dr. Jamieson finds that with this type of diet an increased tolerance to carbohydrate is quickly obtained, so that insulin may later be gradually diminished and often discontinued. He mentions several good practical points for the management of diabetic children. For example, he has the urine collected daily in three lots—breakfast to dinner, dinner to supper, and supper to breakfast. With Benedict's test he determines whether there is greater tolerance at certain meals, allowing a transference of carbohydrate from a meal where less tolerance is shown. He finds that children on this high carbohydrate, low fat diet are more energetic than on the previous type of diabetic diet of the same caloric value, and he encourages all the children to exercise in the open air as much as possible. All children going outside the hospital grounds carry an identification card stating that they are taking insulin, and that if found in a fainting condition are to be given "candy, orange juice, or some sweet drink," and that the hospital should be notified at once. Dr. Jamieson urges that the new type of diet is better relished and secures better co-operation with the child, milk being especially welcomed. The low value for blood cholesterol obtained on such diets appears to be only a temporary phase, very high values being found on discharge in certain of Dr. Jamieson's patients.

[1] *Canadian Med. Assoc. Journ.*, October, 1932

TREATMENT OF ORIENTAL SORE

Oriental sore, cutaneous leishmaniasis, is endemic in Central Asia, and Dr. B. Laqueur has treated 300 cases there, at Termes, near Tashkent, in the last seven years (*Arch. f. Schiffs- u. Tropen-Hygiene*, September, 1932, p. 489). Except on the hairy scalp, the palms, and soles he has found these ulcers everywhere on the surface of the body, whether on the covered or uncovered skin: he even saw one on the glans. During the last four years he has dealt with over 200 cases, and has found the best treatment to be an ointment of equal parts of camphor, olive oil, and yellow wax (this last may be replaced by solid paraffin). In early days he tried the many other remedies recommended, but found they often caused pain, were inconvenient to the patient or required him to remain in hospital, and they never cured the sore in less than a month. His experience of the camphor ointment is more fortunate; he first gets rid of any secondary infection there may be with 5 or 10 per cent. sodium bicarbonate lotion, or other appropriate means, and then applies the camphor ointment. This eases pain, sets up a discharge, which soon ceases when the ulcer dries and cicatrizes, usually within one to three weeks, rarely persisting as long as a month. Patients can be treated at home, and Dr. Laqueur has seen no relapses. This treatment he applies to all these ulcers, except to those about the nose and eyelids, where, in consequence of the risk of osteomyelitis, he prefers to employ *x* rays from the beginning; they arrest ulceration and leave the patient with smooth scars.

The Rudolf-Virchow medal of the Berlin Anthropological Society has been awarded this year to Professor Karl Pearson, F.R.S., director of the Francis Galton Laboratory for National Eugenics, London University.

The Lloyd Roberts Lecture will be delivered at the Royal College of Physicians of London, Pall Mall East, S.W., by Dr. L. P. Jacks on Tuesday, November 22nd, at 5 p.m.; the subject is "The liberal education of the body."

At the quarterly meeting of the Grand Council of the British Empire Cancer Campaign held at 12, Grosvenor Crescent, on November 14th, with Sir John Bland-Sutton, Bt., in the chair, the following grants, totalling £14,100, were made in furtherance of cancer research: £5,400 to the Middlesex Hospital; £2,700 to the Cancer Hospital; £2,250 to St. Bartholomew's Hospital; £1,150 to the Mount Vernon Hospital, £690 to the Marie Curie Hospital, £585 to St. Mark's Hospital, £550 to Mr. I. Hieger, B.Sc., working at the Cancer Hospital; £400 to the Westminster Hospital, £350 to the Medical Research Council towards the maintenance of the Radon Centre at the Middlesex Hospital; and £25 to Mrs. E. K. Dawson at Edinburgh. The Grand Council acceded to the request of the University of Sydney Cancer Research Committee to be represented on the council by Mr. Cecil Rowntree, F.R.C.S., in place of the retiring High Commissioner, Sir Granville Ryrie.

A FRENCH MEDICAL CENTENARIAN

[From our Correspondent in Paris]

On the afternoon of Tuesday, November 8th, the Academy of Medicine in Paris celebrated the centenary of Dr. Alexandre Guéniot, who was present in the flesh, a smiling, alert, straight-backed man, looking as if he had only just reached the seventies. The hall of the Academy of Medicine was crowded, and among those present were Roux and Calmette of the Pasteur Institute, Madame Curie, Justin Godart, Minister of Health, and many other leaders of the medical profession. The centenarian received a great ovation as he entered the hall on the arm of General Gouraud, the Military Governor of Paris. The Minister of National Education, M. de Monzie, introduced one speaker after another, the first to congratulate Dr. Guéniot being M. Meillère, president of the Academy of Medicine. There followed short addresses by various other distinguished orators, who in turn presented their smiling compliments to the occupant of the chair of honour. When the last of these addresses had been delivered he rose, and with easy steps reached the table at which the previous speakers had stood while delivering their orations. They had all been tied to the written word, but the youthful centenarian delivered himself of the opening sentences of his speech without referring to his manuscript. Later on he read his written reply, sitting at the table, but always in a clear, ringing voice.

Dr. Guéniot, seated between General Gouraud, Military Governor of Paris, and M. de Fontenay, Chairman, Municipality of Paris.

His sallies of wit were vehemently applauded, and he ended his speech on a note of happy nonchalance, as if thanking the Academy of Medicine, the Government of France, the Municipality of Paris, and many other distinguished bodies for their birthday congratulations was, after all, quite an everyday matter to be handled with easy courtesy.

Dr. Guéniot's career has been distinguished by his work as an obstetrician and surgeon. He has held many important positions, including the presidency of the Academy of Medicine. As an author he has contributed not a little to medical literature, and one of his best-known books is *Pour Vivre Cent Ans*, written several years ago. It proves that even medical writers may practise what they preach. In this book the author advises all who would achieve five-score years to be *attentive*—a reference, no doubt, to the tendency of motor cars to run counter to the aspirations of would-be centenarians whom they overtake on the highways. In the course of the ceremony at the Academy of Medicine the president of the Municipal Council of Paris handed to Dr. Guéniot the medal of the town of Paris, a replica of that presented to a genuine veteran of 117 years at the inauguration of the statue of Louis XIV in the Place des Victoires. The centenarian's comparative youthfulness was alluded to by M. de Monzie, who reminded him that Hippocrates attained the age of 109, that Charles VIII was attended by a medical practitioner much Dr. Guéniot's senior, and that Napoleon in 1809 received in audience a doctor who was born in 1690.

The Parisian daily press has, of course, given this birthday the publicity it deserves. What is assuredly the most interesting of all these press comments is a short article in *Paris-Midi* for November 8th by Pierre Audiat, who has unearthed a letter written to a friend on November 9th, 1832, by Dr. Guéniot's father. Part of it runs as follows:

"I do not know whether to be happy or sorry over the birth of a son to which I have contributed only a modest share. The poor infant comes to the world in very troubled times. Hardly seventeen years have passed since peace was restored to Europe, and we still suffer cruelly from the effects of the war. If only our legitimate monarchs had known how to keep the throne of their ancestors! But the triumph of this Orléans dynasty leaves me cold. Believe me, a parliamentary monarchy is the ante-chamber of the 'canaille.' Who knows if my son will not one day be forced to become the citizen of a Republic? It is enough to make one shudder.

"Besides, the conditions of life are daily becoming more difficult. Nanette, our servant, has paid 23 sous for half a kilo of butter, and 2 sous for each fresh egg. It is absurd and exorbitant! Impossible, also, for a young man of good family to make his way through the crowd of those who aspire to become professors, advocates, notaries. I would like to see my son embracing the noble career of medicine, but I see quite well that he cannot; one of the heads of the Faculty has confided to me that this profession is literally invaded.

"And then, this madness of speed is wearing out men. Only yesterday I saw a post chaise tearing along. It makes one giddy. The horses were galloping at more than five leagues an hour. And everyone wants his carriage. And the streets of Paris are so congested that one must wait a long time if one wants to cross them.

"Madness of the century, my dear friend, for which men will pay in the brevity of their days. My son, like his contemporaries, will not live to be old. He is now 48 hours old; we know not what the future has in store for him, but we can bet with certainty that he will not become a centenarian."

MEDICINE AT CAMBRIDGE

PROPOSALS FOR A MEDICAL SCIENCES TRIPOS

On October 25th the report of the syndicate on the medical courses and examinations of the university was discussed in the Senate House at Cambridge. Before considering this discussion we may recapitulate briefly the events which led up to it.

The growing dissatisfaction with the medical curriculum at Cambridge was expressed in a memorandum drawn up by Dr. A. Clark Kennedy in 1929. As a result of this a committee consisting of the then Regius Professor of Physic (Sir Humphry Rolleston), the professor of pathology (Dr. H. R. Dean), Dr. E. D. Adrian, and, later, Dr. T. S. Hele, was appointed to examine the situation. The committee submitted a questionary to twenty-two collegiate supervisors and directors of studies. The memorandum which it presented to the Vice-Chancellor in 1931 was therefore based on an intimate knowledge of the needs of the medical student. The Cambridge medical student, stated the committee, who took the Natural Sciences Tripos as well as the second M.B. during his three years' residence, was overworked, over-examined, and

harried by a very complicated lecture list and time-table, and was therefore unable to take a reasonable share in the social, athletic, and other university activities. Few people who have been so harried will disagree with this statement. One method of avoiding this irksome situation has already been taken—by the undergraduates. During the years 1906–11, 77 per cent. of the medical students sat for the tripos; in the period 1920–26 the percentage was only 44. The main difficulties in the way of a medical student who wishes to take the tripos as well as the second M.B. may be summarized as follows. Most men try to pass the anatomy and physiology of the second M.B. at the end of their second year. This leaves one year in which to work for the tripos; anatomy, physiology, and one other science (usually zoology) are the subjects chosen. This means that in three terms a fresh subject has to be tackled practically *de novo*—or, rather, two subjects, for tripos anatomy (being based on morphology and embryology) is really a distinct subject from second M.B. anatomy, which is purely topographical. Thus the medical student is at a double disadvantage in comparison with the non-medical student who sits for the Natural Sciences Tripos. The latter has already done a good deal of chemistry and physics at school, and may comfortably continue these subjects at Cambridge. The former not only has to make himself acquainted with two, and often three, new sciences, but two of these have to be crammed into the last year. This is unfair to the medical student, puts a strain on his examination activities, and gives him no time to sit and think about the facts which pile up like Pelion upon Ossa till almost the last day of his residence at Cambridge.

The representative syndicate which was appointed in 1931, under the chairmanship of the Vice-Chancellor, to make remedial proposals is agreed that the present state of medical education in Cambridge is most unsatisfactory. The discussion in the Senate House on October 25th[1] found no dissentients from this point of view, but unanimity as to the best way of reconstruction was, as might be expected, lacking. All who spoke agreed that something must be done. Some suggested that any remedy, however inadequate, was better than no remedy at all.

DEBATE IN THE SENATE

Sir Humphry Rolleston, opening the debate, briefly reviewed the steps which had been taken to investigate the medical curriculum and the recommendations that had been made. The syndicate, he said, were of the opinion that all medical students should be compelled to sit for a tripos, and that this should be so arranged as to give exemption from the second M.B.; that the best solution of the various problems involved was the formation of a Medical Sciences Tripos; and that all examinations for medical students should be controlled by one Faculty Board. Human anatomy was no longer to be divided into the separate sections—human anatomy, and comparative vertebrate zoology and embryology: these two were to be closely associated. Physiology was to include biochemistry and pharmacology. In the proposed Medical Sciences Tripos anatomy and physiology were to count as two-unit subjects, the student being required to take a combination of subjects equivalent to six units. The remaining two units could be made up by half-subjects—namely, optional anatomy, zoology, pathology, biochemistry, and chemistry.

Dr. A. Clark Kennedy pointed out that the trouble in the existing system did not lie in the teaching but in the lack of co-ordination between the different subjects and examinations. The M.B. examinations were controlled by one Faculty Board and the Natural Sciences Tripos by five. The medical student, it seems, is in danger of falling between, not two, but six stools. A modification of the existing Natural Sciences Tripos would have met the needs of the medical student, but he would still be under the control of five Boards. If medical education was to advance it must be brought under the control of a single Board. As Sir Walter Fletcher remarked later in the discussion, what is needed is a revision of the Natural Sciences Tripos, and the multiplicity of Boards is a feature not specific of medical education, but of scientific education generally. The anatomy and physiology of the existing Natural Sciences Tripos should be the same as in the Medical Sciences Tripos and controlled by the same examiners. A class in *either* tripos would (if anatomy and physiology are both taken) enable the student to pass straight on to the third M.B. If either anatomy or physiology is omitted from either tripos, the subject left out must be passed on a qualifying examination, which is not to be taken till after the end of the third year. Although the three years at Cambridge should be spent mainly in pre-clinical studies, the teaching of physiology, pathology, and pharmacology on clinical cases at Addenbrooke's Hospital are (in the new plan) to be developed. These proposals are excellent in that they lessen the hours of work and avoid the press of successive examinations, but there is a risk that the medical student, with four subjects for his tripos (two of them half-subjects) and bedside demonstrations at Addenbrooke's, may become somewhat of a scientific dilettante. This fear may have been felt by the Professor of Botany, who in a letter to the Vice-Chancellor said that "the new tripos, which I do not hesitate to call a vocational examination—and in course of time it could not fail to become more vocational than the syndics contemplate—would be a sorry substitute for the Natural Sciences Tripos." Professor Seward held that the proposed exemption of anatomy and physiology through Part I of the Natural Sciences Tripos would solve the main problem. Professor Stanley Gardiner made a similar objection to the proposed scheme. If Cambridge, he said, was not to become a "degree factory" they must see that all their honours students, not merely in medicine but in all subjects that might directly lead to professions, had in each the necessary basal education. In the scheme he outlined he again suggested that students taking anatomy (altered, as proposed, to include human anatomy, vertebrate morphology, and embryology) and physiology in the Natural Sciences Tripos should be excused the second M.B. in these subjects. This idea was also supported by Dr. Eric Holmes, Sir Walter Fletcher, and Professor A. V. Hill. The last two speakers in their opposition to the report expressed fully their concern with the wider issues at stake. A general scientific education, in which the principles of science, the method of experiment, and the judging of evidence are emphasized, is more important than a Benthamite acquisition of facts. It would be deplorable, as Professor Hill said, if Cambridge were in the matter of medicine to become a "college of technology." Mr. Thirkill, speaking as a director of studies, said that the institution of the new tripos, though by no means ideal or final, was the most satisfactory solution, and that if this was done the lot of the medical student would be definitely improved. Professor Langdon Brown also gave his support to the proposed reforms on the grounds that the more real and actual the training of the medical student the better it would be for the community.

Professor Dean, in a very able defence of the proposed reforms, said that the imposition of a time limit of three years had made the task of the syndicate difficult. The epithet "vocational" must be regarded by the syndicate as a compliment. As to the objection that the institution of a Medical Sciences Tripos would lead to a

[1] *Cambridge University Reporter*, No. 2907, November 7th, 1932.

segregation of medical students, such segregation, so far as work was concerned, already existed. Professor Dean's defence of pathology as an important branch of biology was a most skilful piece of argument. Professor Barcroft favoured the acceptance of the new proposals, and urged "the absolute necessity of doing something." Altogether eight of the contributors to the debate were for and ten against acceptance of the new scheme.

The committee and the syndicate deserve every praise for the strenuous efforts they have made in their examination of a most difficult problem—or, rather, series of problems. Two main conclusions, at least, have been reached: first, that the present state of medical education in Cambridge is beyond any doubt unsatisfactory; and, secondly, that to preserve the status of Cambridge as a medical school something must be done. Important modifications of certain subjects, notably anatomy, have been advocated, and agreement on these is fairly general. The institution of a new Medical Sciences Tripos has much to be said for it and a good deal more against. The reputation of Cambridge as a great scientific centre rather than as a centre for training in special vocations must not be damaged. The medical student who goes up to Cambridge enters the university as much for its scientific and social benefits as for what he can get out of it in technical training for his own particular profession. The interests of the latter are the chief concern of his hospital years after he has gone down. Of the various proposals put forward exemption from the second M.B. through the anatomy (modified for this purpose) and the physiology of the Natural Sciences Tripos would go far towards solving the main problem. It may not be a wise thing to differentiate the medical student from other students in *compelling* him to take a tripos as the syndicate has proposed; and it would certainly be unwise to lower the standard of any tripos so that, as one speaker urged, "the average man should have no difficulty in passing it."

MEDICAL CONGRESSES, 1932-3

The following congresses and conferences on medical and allied subjects have been announced for 1932–3. Particulars are given below in the following order: date, name of organizing body, place of meeting, name of person to whom inquiries should be addressed. More detailed information about these meetings is given from time to time, as it becomes available, in the news columns of the *British Medical Journal*.

November 30 and December 3.—Conference on Place of Biology in Education. London. British Social Hygiene Council, Carteret House, Carteret Street, S.W.1.

December 1–2.—Central Association for Mental Welfare. London. Secretary of Association, 24, Buckingham Palace Road, S.W.1.

April 5–7.—British Congress of Obstetrics and Gynaecology. Birmingham. Mr. W. E. Barnie-Adshead, 89, Cornwall Street, Birmingham.

April.—International Congress of Ophthalmology. Madrid. Dr. F. Poyales, Olazaga, 3, Madrid.

May 29.—International Congress of Military Medicine. Madrid.

July 5–9.—International Union for the Protection of Childhood. Paris. Comité National de l'Enfance, 26, Boulevard de Vaugirard, Paris XV.

July 18–20.—International Congress of Paediatrics. London.

July 19–22.—International Society of Orthopaedic Surgery. London.

July 25–29.—British Medical Association. Dublin. Medical Secretary, B.M.A. House, Tavistock Square, W.C.1.

September 7–9.—Association Professionnelle Internationale des Médecins. London. Dr. F. Decourt, Mitry-Mory, France.

September.—International Congress of Mental Hygiene (European Reunion). Rome.

September.—Société Anonyme des Eaux Minérales d'Evian-les-Bains. Evian-les-Bains. Secretary of Society, 21, Rue de Londres, Paris IX.

1933.—International Society of Microbiology. Berlin.

1933.—Anti-War Congress (Meeting of International Medical Conference). London.

1933.—German Pathological Society. Rostock.

1933.—German Physiological Society. Vienna.

New Zealand

[FROM OUR CORRESPONDENT IN WELLINGTON]

Hospital Administration

The hospitals of New Zealand are not maintained by voluntary subscription; they are supported chiefly by contributions from the Government and rates levied by local bodies, and, to a small extent, by patients' fees. The chief advantage of this system is that finance can never break down so long as Government taxation and local rating can bear the strain. The disadvantages are that the system is not conducive to economy, and may even tend to gross extravagance. As a result of the economic stress in New Zealand an inquiry has been held by a National Expenditure Commission, and the report of this body shows clearly that the time has now arrived when drastic economy is necessary in both public health and hospital services. By way of exception, additional expenditure is recommended on mental hospitals, where accommodation is quite inadequate, and it may be no cynical asperity to suggest that the mental hospital patients, having no votes in political elections, are less pampered than their more fortunate fellows, who have the political power of the franchise. It is well known that for many years all Governments were primarily concerned with the defence of the State against aggression, the administration of justice, and the preservation of law and order, but these functions are not so popular with electors and their representatives in Parliament as the so-called social services. Thus, as a sign of the times, within seven years defence charges on taxation per head of mean population have fallen from 14s. 5d. to 10s. 10d., and charges for justice, law, and order have similarly fallen from 10s. 7d. to 6s. 10d., while the cost per head of social services in the same period has risen from £2 16s. 6d. to £4 5s. 8d. During the same period the annual expenditure of the Ministry of Health has increased fourfold, now totalling £244,000, and the capital and maintenance expenditure on public hospitals, in addition, has increased in a similar ratio, amounting in the year 1931 to close on two million pounds. The social services under the direct control of the Ministry include State maternity hospitals, school medical service, school dental service, and grants to philanthropic bodies at one time on a purely voluntary basis. The Commission also recommends a reduction in the staff of the Ministry of Health and a curtailment of various services which are not held to be properly a function of the State. If the recommendations of the Commission are made effective the result should be a saving of £80,000 a year.

In regard to the cost of hospitals, it is proposed that political control should be removed and the policy determined by a non-political board, with authority throughout the whole Dominion. The administration of hospitals in any district will be under the control of district boards. The forty-five hospital districts at present in existence will be abolished, and only eighteen will be established, with base hospitals in the centres of population and subsidiary hospitals as necessary throughout the individual areas. The Central Board will have power to close hospitals and to determine which shall be subsidized out of Government funds. The report states that if the recommendations are adopted a more efficient hospital service will be established, and the cost to the Government will be reduced by £300,000 a year. As aids to efficiency, it is claimed that the average stay of patients in hospital can be reduced, supervision improved, and hospitals prevented from undertaking work for which their equipment and staffing is unsuited. The Commission is of opinion that the influence of local politics is felt particularly in the small areas, and, as a result, there is a reluctance to

apply pressure in the collection of fees from patients. It is also stated that if patients were charged the full amount for maintenance and treatment in public hospitals the cost would be higher than in private hospitals. It is certain that if hospitals were freed from political control parochial jealousy or ambition would have less scope. It would be too much to expect, however, that the recommendations of the Commission will be adopted in full by Parliament, but no doubt a reasonable amount of reform will result, and the public purse will be more securely guarded.

Goitre Research

The province of Taranaki contains pastures very suitable for dairy farming, and large quantities of fertilizers, mainly in the form of superphosphates, are used on the soil ; of late, also, the use of artificial fertilizers has greatly increased. Medical men in Taranaki have noticed a considerable increase in goitre among children, and this increase is at present being investigated by medical officers of the Department of Health. It is held that the iodine content of the soil is only one factor in relation to enlargement of the thyroid gland, and may not be of primary importance. A theory has been advanced that the use of fertilizers may have reduced the iodine content of the soil, but this theory does not appear to have any sure chemical foundation. A more reasonable theory is that the general enlargement of the thyroid gland in children in Taranaki is not necessarily goitre, but a provision of nature, probably temporary, to cope with the changed properties of human food brought about by the artificial top-dressing of pastures. It is also reported on good authority by the veterinary branch of the Department of Agriculture that a number of enlarged thyroid glands have been observed in calves, and a scientific investigation of calves so affected is to be undertaken. This may throw some light on a problem which appears to present a new and interesting phase.

India

Medical Aid for Women

The National Association for Supplying Female Medical Aid to the Women of India (Countess of Dufferin's Fund), has as its objectives the teaching and training of women in India as medical practitioners, hospital assistants, nurses, and midwives, and the establishment under feminine supervision of dispensaries and cottage hospitals for the treatment of women and children, of special wards in other hospitals, and of a regular supply of trained nurses and midwives for private work. In its annual report for 1931 it is stated that 1,521 beds were available for women and children in the hospitals under officers of the senior branch of the Women's Medical Service, 35,156 in-patients were treated, and 14,269 operations were performed. At these hospitals 205 young Indian women were under training at the end of the year, the course consisting of three years in general nursing, and an additional six months for midwifery training. All are now examined by recognized boards of examiners. Particulars are given in the report of the work done in the various hospitals and other institutions controlled by the National Association at the Lady Hardinge Medical College, Delhi ; the construction of an additional residential hostel has been approved, but the Government has been unable to assist as yet. At the hospital in connexion with this institution lead selenide and radium therapy has been applied to gynaecological cases of malignant disease with promising results. The ante-natal clinic, started in August, 1930, has been functioning actively in close co-operation with local welfare workers. Dr. O'Brien Beadon, the obstetrical and gynaecological surgeon, comments on the improvement in the proportion of normal labour cases during the year under review, and attributes it to a growing confidence of the public in hospital treatment and to the work of the ante-natal clinic. Osteomalacia as a cause of pelvic contraction seems to be on the increase, and the lower segment operation has proved to be much safer than ordinary Caesarean section, particularly in infected cases. Other hospitals record serious overcrowding and great anxiety due to the withholding or reduction of Governments grants. At the Lady Reading Hospital, Simla, however, careful economies, increased donations, and the obtaining of fees from patients resulted in a bank overdraft at the beginning of the year being changed into a satisfactory balance. The zenana section of the Lady Reading Hospital at Peshawar, the Provincial Hospital for the North-West Frontier Provinces, is in process of completion, when fifty-four beds will be available. Separate departments for out-patients and maternity cases have been provided. A fall in the number of abnormal labour cases at the Government Caste and Gosha Hospital, Madras, is attributed to the great popularity won by the new ante-natal department, to which is attached a special ward. Refresher courses in midwifery, gynaecology, and ante-natal work have been instituted, and special courses have been arranged for midwives in the employment of local authorities. Much-needed extensions at the Victoria Hospital for Women and Children at Vizagapatan have been stopped by lack of funds, but the new ante-natal clinic has done well, particularly as regards the detecting and treatment of cases of the albuminuria of pregnancy, malpositions, and venereal disease.

Assam Hospitals and Dispensaries

During the three years 1929–31 the attendance at the 254 hospitals and dispensaries in Assam increased very considerably ; building improvements were effected, and various administrative advances were made. Leprosy is very prevalent in the province, and in his triennial report Colonel J. P. Cameron, inspector-general of civil hospitals, states that the organization for dealing adequately with the treatment of patients is gravely incomplete. It has been decided, therefore, to provide greater facilities by establishing therapeutic centres over a wide area, and to employ the public health kala-azar staff as assistants in them on a part-time basis. In this way it is hoped to raise the number of clinics in the province from eighty-one at present to well over 200. The cost of drugs and equipment required for these treatment centres conducted by the kala-azar staff will be met by the provincial Government, with such assistance as may be forthcoming from the British Empire Leprosy Relief Association. Dr. Muir's pamphlets on leprosy have been translated into Bengali and Assamese, and are being distributed freely. A leprosy survey was made of certain tea estates and the neighbouring villages. A leprosy hospital was to have been constructed, but this has been delayed by shortage of funds. Yaws is also very prevalent, and in one district an intensive campaign was arranged against its spread. Great initial success in treating the cases resulted in the treatment centres becoming crowded with new patients, and it is suggested that as soon as funds are available a determined effort should be made to eradicate the disease from the infected districts. The prevalence on certain tea estates of epidemic dropsy was traceable, probably, to a toxin present in deteriorated rice, and not to any over-milling and polishing; further efforts are being made to determine and eliminate the cause of the disease. The nucleus of a nursing service has now been established in view of the conspicuous absence of trained nurses in the hospitals. A medical research society was inaugurated

in 1931, and a good deal of useful work has already been undertaken in the investigation of malarial conditions in various districts. A provincial committee was also brought into being to co-ordinate anti-malarial activities and to develop a definite policy. A scheme of post-graduate training for local board medical practitioners is under consideration, financial stringency having prevented them from attending courses at Calcutta as they had done previously.

The Burma Medical School

Still further improvement in the teaching of physiology and anatomy was one of the salient features in the working of the Burma Government Medical School at Rangoon during the year 1931–2. The introduction of botany and zoology into the curriculum proved beneficial, but it was found to encroach too much on the time allotted for physics and chemistry, and, consequently, an elementary course in biology was substituted for it. The session began on June 18th, 1931, with 164 students on the roll, of whom fifty-eight were in their fourth year. The usual course of training in practical midwifery was given at the Dufferin Hospital, Rangoon.

England and Wales

London Tuberculosis Dispensary Service

Hitherto the London County Council has contributed 25 per cent. towards the net approved expenditure incurred by the metropolitan borough councils on the tuberculosis dispensary service provided by them. It now proposes to substitute for the percentage contribution a block grant system, the block grants to be, in the first instance, for a period of three years from April 1st, 1933, and, if the scheme proves satisfactory, for further periods of three years thereafter. The block grant for the first period is to be based on the latest available figures of actual expenditure, with such modifications to meet anticipated variations in future cost as may be determined, and the metropolitan borough councils are to give an undertaking that no reduction or expansion of the service or facilities shall be made without the prior consent of the County Council. It is stated that essential developments arising from the administration of the transferred services under the Local Government Act, 1929, are in the direction of bringing the tuberculosis dispensary service into closer association with the functions of the Council, and that it would appear that it is only by retaining the closest co-operation with the dispensary service, together with some financial responsibility therefor, that the Council can effectively fulfil its statutory obligations and provide a comprehensive scheme for dealing with tuberculosis in London in all its aspects. At the same time, in view of the experience now gained, and of the fact that the expenditure has become more or less stabilized, it is felt that a block grant system might well take the place of a percentage system, with some relaxation of the requirements as to the submission of financial and other details by the borough councils.

Torquay as a Health Resort

The publicity department of the Torquay Corporation, with the approval of the local Division of the British Medical Association, has issued a small brochure on "Torquay as a health resort." In a few pages the general advantages of this marine resort are set out, the characteristics of its genial climate, particulars as to its baths and spa treatments, and its hospital and nursing home accommodation, and, perhaps most useful of all, a list is given of private hotels and boarding and apartment houses, with their accommodation and tariff, which provide normal invalid diet without extra charge. The climate of Torquay has the advantage of a low mean daily range of temperature, abundant sunshine, moderate rainfall, and low humidity. It is not pretended that it can compete with Mediterranean sunshine, but it is spared those rapid variations of temperature which are experienced on the Mediterranean, where the thermometer may fall by 5° F. in ten minutes, and the mean daily range may be as high as 18°. In Torquay the mean daily range, measured over a period of half a century, is below 11°, and in the winter months below 8°. The annual sunshine hours are about 1,800, and the winter sunshine averages about 29 per cent. of the possible. In the number of rainy days during the year—173 on the average of the past thirty years—Torquay compares favourably with localities having a much lower annual rainfall. The mean relative humidity is only 78 per cent., and below the average of the country as a whole. Torquay is fortunate in possessing an up-to-date and well-appointed bathing establishment, under the control of its corporation, which also owns its spring of natural mineral water.

Dispensers in London Council Hospitals

The Central Public Health Committee of London has been considering scales of salaries and conditions of service for the dispensing staff in the public health department at hospitals, institutions, and out-relief dispensaries. At the general hospitals and dispensaries of the London County Council seventy-three dispensers and assistants are employed, ten of whom are part-time officers, and at the special hospitals nineteen whole-time and two part-time dispensers. In certain cases the dispensers carry out extra duties such as radiography, insurance dispensing, preparation of sputum for bacteriological examination, or dentistry, and receive additional remuneration. In most cases it is a condition that the dispensers shall be either pharmaceutical chemists or chemists and druggists. In the general hospitals the salaries for whole-time officers range from £180 to £475, and bear little or no relation to the volume of work performed. In the special hospitals the salary scale has been standardized at £227 a year, rising to £292. In the London voluntary hospitals the maximum salaries for pharmacists or senior dispensers range from £252 to £600 a year. In the new grade of salaries proposed by the London County Council for its dispensers, the hospitals and dispensaries are divided into three classes, chiefly according to the size of the institution. The salary scale in the first class is to be £400, rising by increments of £20 to £500 ; in the third class, a salary of £250, rising by increments of £10 to £300 ; and in the second class an intermediate scale ; while for part-time officers the rate of payment is to be on the basis of £85 a year for ten hours' work each week. It is to be provided that existing arrangements whereby certain pharmacists perform extraneous duties and receive additional remuneration therefor shall be continued until the present officers vacate their positions, when the non-pharmaceutical work is to be dissociated from the positions concerned, and the grading thereof adjusted accordingly ; also that in hospitals where there is no pharmacist a medical officer is to be responsible for the dispensing.

Central Midwives Board

At the November meeting of the Central Midwives Board for England and Wales the business dealt with included a letter from H.M. coroner for Halifax, asking if a midwife should summon medical aid in all cases of premature birth or only in those cases in which there is some further complication, such as is mentioned in Rule E 21 (5). It was agreed to reply that, in the opinion of the Board, a premature birth is not, in itself, such an illness or abnormality as is referred to in Rule E 20. The

Board regards "feebleness" and not "prematurity" as the proper test for obtaining medical aid. The application of the Jewish Maternity Hospital for approval by the Board, under Rule E 26, was granted. Approval as lecturer was granted to: Mr. W. McKim McCullagh, F.R.C.S., City of London Maternity Hospital, and Mr. Ian Monro Robertson, F.R.C.S.Ed., Hastings District Nursing Association. It was agreed that the glossary be omitted from any future edition of the rules, having regard to the fact that substantially all midwives are now trained midwives.

CORRESPONDENCE

Science and Unemployment

SIR,—Two and a half days have not been enough to pool half the experience and suggestions on unemployment from the back benches. But there has been at least one conspicuous omission from the debate—namely, the part science must play in the problem.

Mr. Lansbury quoted a recent writer as saying "science is progressively diminishing the demand for man power." This is a glaring fallacy. So said the mob that broke up the first spinning jenny. What could industry do without steam, gas, electricity, fine chemicals, the internal combustion engine—all the products of science? Labour-saving machinery is but a by-product of science. It is to science we must look for fresh developments of individual and corporate life, creating fresh desires and interests in all parts of the world and increasing the demand for man power.

The basis of scientific discovery is research, real and not spurious, well guided but free, alike in the basic arts and sciences and in their application to life and industry. In this country we starve research; we appreciate the results, but not the necessary precedents. Honour is given to those who explore mountain heights, deserts, and polar regions; little to those who explore Nature and substance at our very doors.

The encouragement of research—both in pure and applied science—must be one of the most vital, as it is one of the few hopeful, factors in the future expansion of industry and solution of unemployment—I am, etc.,

House of Commons, Nov. 9th. FRANCIS FREMANTLE.

Kala-azar

SIR,—In the annotation on the kala-azar problem in your issue of November 12th you correctly state that the 1918 recrudescence of the Assam epidemic was preceded by the pandemic of influenza, but the theory that the original epidemic "was preceded by a devastating earthquake" is new to me. This, I think, can only refer to the terrible Assam earthquake of 1897, which buried the report of my 1896–7 investigation. As that report is not now readily available, may I recall that in Chapter VIII, pp. 165–192, I dealt at length with the origin of the Assam epidemic, first described in 1883, fourteen years before the great earthquake, and showed that kala-azar first appeared at the foot of the Assam Garo Hills to the east of the Brahmaputra River, about 1875, during a remarkable series of five out of six years of deficient rainfall in the Eastern Bengal districts of Bengal to the west of that river, such as I found are always accompanied by widespread malaria in that deltaic region. Moreover, the disease appeared in Assam at two places fifty miles apart, near each of which ferries crossed the ten-to-twenty-mile-wide river. At that time I thought the Assam epidemic was an extension of the Eastern Bengal malaria epidemic of 1872–7, but when the kala-azar parasite was discovered by Leishman in 1903 I realized that the long-existent endemic kala-azar of Eastern Bengal, which I discovered in 1904 in the Dinajpore district, had been lighted up by the malarial epidemic, and then spread to Assam.

These facts are of importance in enabling future recrudescences of kala-azar to be foreseen; for in my 1897 report I recorded a warning which was verified by the 1918 outbreak. This happily occurred when the recently discovered antimony treatment was available to check it with very little loss of life compared with the decrease of 31.5 per cent. in the population of the Nowgong district of Assam between the censuses of 1891 and 1901.—I am, etc.,

LEONARD ROGERS.

London, N.W.3, Nov. 14th.

Research in Mental Disease

SIR,—In his excellent and all-too-true remarks concerning the absence of psychological research in psychiatry, Dr. Suttie has omitted to emphasize two points that to me seem worthy of specific mention.

The first is one of method. There is in British psychiatry the fairly generally applied principle that the mental physician should deal at one and the same time with all the different aspects of psychological medicine, be they medical, mental, legal, or administrative. The American method of having full-time specialists in each institution has not as yet made much headway in this country, and though we admit the necessity for exclusive expertness in physical pathology, we have not done so in respect of mental pathology. Until such specialization is encouraged, or at least made possible, it is unlikely that the study of psychopathology—a highly abstract study that requires undivided time and attention as well as clerical and filing assistance, social workers, experimental psychologists, etc.—will make much progress.

The other matter is a psychological one, and at least as important as any hitherto discussed in this correspondence. The modern trends of psychopathology reveal more and more the absence of a definite line separating the sane from the insane. All those mechanisms that are being unearthed in the mentally deranged are found to be but unusual or "unsocial" expressions of what occurs in the so-called normal mind. And even the normal mind is not as secure on its "pedestal of health" as formerly: there is a growing suspicion that much of our normality consists more in merely avoiding certain objectionable forms of behaviour than in achieving anything like a good mental insight and balance. As a result we fear—and therefore fail—to discover in a patient those mechanisms that we do not wish to recognize in ourselves. The psychological *descriptions* of patients' conduct, so ably carried out by the older school of psychiatrists, began to fall into disrepute just as soon as modern *interpretations* came into the field, and one feels that the "flight of the physician from the patient" mentioned by Dr. Suttie might equally well be termed the "flight of the physician from himself."—I am, etc.,

Warrington, Nov. 6th. J. ERNEST NICOLE.

Poliomyelitis in a School

SIR,—In the *Journal* of November 12th Dr. Craig and Mr. Lowe invite criticism of their action in connexion with the above subject. During the war I found myself in a similar position. I know, of course, the school to which they refer, but that does not matter. The authorities of the school in question may well congratulate themselves on the fact that they had such sound advice given to them in the most unfortunate position in which they so suddenly found themselves a few weeks ago.

I offer one word of criticism, and one only, and that is that a more definite reply might have been given to Question 4, as it is possible for an assistant master, even if he himself is free from active symptoms, to convey infection to his own child, and he should have been told this. In all other respects I hold that what might have been an epidemic, with its consequent disaster, was most ably handled.—I am, etc.,

ARTHUR M. BARFORD, M.D., D.P.H.

Chichester, Nov. 12th.

Prostatectomy

SIR,—In the *British Medical Journal* of November 12th Mr. S. Harry Harris of Sydney utters a protest against the scant courtesy which he had received in Mr. Swift Joly's and my own papers at the B.M.A. discussion on prostatectomy held in July of this year.

I regret very much that he should have discovered in my own paper any failure to appreciate the efforts he is making to improve the operation of prostatectomy. I would assure Mr. Harris that, in spite of the advances which have been made in prostatic surgery, I am profoundly dissatisfied with that operation. Any surgical proceeding that may be followed by as difficult a convalescence as the convalescence after prostatectomy must be deemed unsatisfactory, and no sane urologist would ever fall into the error of believing that the technique of prostatectomy is incapable of improvement. The mere fact that so many techniques are in use is a proof that each labours under some disadvantage. When the form of an operation has been perfected we find only the slightest variations in the manner in which it is carried out by different surgeons.

Any attempt to bring about an improvement in the technique of prostatectomy is therefore to be welcomed, and nobody reading Mr. Harris's account of his own results can fail to be impressed. What criticisms I may have made on the subject of plastic operations on the prostatic bed referred only to my own efforts to follow Mr. Harris's lead. It not infrequently happens that an operation which in the hands of its originator gives good results fails in the hands of others. It may well be that some point in technique has not been properly carried out. In the present instance the haemorrhage that troubled me during the insertion of the deep sutures was probably due to the use of a boomerang needle of the wrong pattern. In spite of my own failure to obtain the results secured by Mr. Harris, I feel that he is working in the right direction, and that some day surgeons will regard the present technique of prostatectomy as crude and unfinished. In the meantime there is much work to be done.—I am, etc.,

KENNETH WALKER.

London, W.1, Nov. 12th.

SIR,—The letter from Mr. S. Harry Harris prompts me to commend another method of securing satisfactory haemostasis in the prostatic cavity during prostatectomy. It has the merit of simplicity.

Following the enucleation of the gland and temporary control of haemorrhage by gauze tampons, the toilet of the "rim" is completed, tags of mucosa, etc., being excised and obvious bleeding vessels underrun with a catgut stitch. The walls of the oozing cavity are then painted with pledgets of wool soaked in Zenker's fluid. This latter tissue-fixative serves adequately to secure a dry prostatic bed in most cases and to warrant a primary closure of the bladder if desired. Primary closure should only be essayed where the urine is uninfected and the renal apparatus relatively intact. (In bad risk cases the Freyer operation with gauze packing of the prostatic cavity appears a safer procedure in the hands of most than the open operation.)

This technique appears to combine the advantages of the operations associated with the names of Lower and Harris, ensuing from a satisfactory control of the haemorrhage without the use of gauze or "bags," and avoids the narrowing of the vesical outlet associated with these suturing procedures. It is, moreover, simple in execution. The coagulum formed by the fixative minimizes the septic absorption from a raw, granulating area in infected cases and allows primary closure of the bladder where pre-operative infection is not present.

In conclusion, I would reiterate my conviction that only a small proportion of prostatics need be subjected to prostatectomy, with its high operative mortality and its not infrequent unpleasant sequels. Endoscopic resection of the obstructing tissue only is, in skilled hands, an adequate alternative, affording a full measure of relief in the great majority of vesical neck obstructions with a minimal risk (two deaths in a personal series of 102 resections), short hospitalization, speedy convalescence, and leaving an undamaged sexual apparatus.—I am, etc.,

TERENCE MILLIN.

London, W.1, Nov. 12th.

Chronic Appendicitis: "Lockwood's Sign"

SIR,—Dr. Friedlander's interesting article published in the *Journal* (November 5th, p. 832) shows that an important sign of chronic appendicitis is not as well known in the profession as it should be. The late Mr. C. B. Lockwood taught his dressers as follows:

"The patient lies on his back with his head raised on a pillow and his knees drawn up, so that the superficial abdominal muscles are relaxed. The surgeon sits down near his right side and palpates the right iliac region near McBurney's spot with the three inner fingers of his left hand. If he feels a trickle of flatulence passing his fingers, *and if this can be often repeated after waiting a half to one minute, or a little longer*, the patient has either a chronically inflamed appendix or adhesions near it."

The trickle of flatulence was expressly stated not to be the large gurgle of gas collected in the caecum, but a small, fine crepitation with a higher note. During the last ten years I have tested this sign in over 600 cases verified by operation; it has, in fact, been the determining sign. It has been positive in every case but one. Two positives have been noted in cases which were not appendicular, but these had calcified glands in the ileocolic angle. Negatively the sign is of constant value in excluding appendicular adhesions or the appendix which is apparently normal on section. When the appendicular trouble is lying towards the pelvis the sign is felt lower down and nearer the middle line. In the Near East, during the war, the sign was of the utmost use in differentiating the pseudo-appendicitis of post-febrile (malarial) constipation from true inflammation of the appendix.

Lockwood did not publish the observation as far as I know. When teaching it to students I usually call it "Lockwood's sign." He thought the explanation lay in some mechanical interference with the working of the ileocaecal valve. One might also read into this the interference caused by Lane's controlling band.—I am, etc.,

G. H. COLT.

Aberdeen, Nov. 7th.

Dressing of Wounds

SIR,—With reference to Mr. Blundell Bankart's letter of November 12th it is interesting to note that better results are being now obtained in the treatment of wounds by procedures which, to the lay and medical mind, appear as nothing more or less than atrocious neglect. To the Winnett Orr treatment of osteomyelitis, the pus dressings of Sir Henry Gray, and the maggots of Baer, one must add two other "neglectful" procedures which cure by giving Nature a chance—namely, the Davidson treatment of burns by tannic acid crust, and the strapping of ulcers with adhesive plaster.

In addition to the good results obtained from the strapping of chronic ulcers of the legs, even more striking results may be obtained in bed sores, tropical ulcers, and burns after the tannic scab has separated. In a recent paper Donaldson has described his results in treating the severe and grossly contaminated abrasions and lacerations of the skin which he encounters in the Crown Mines in South Africa. He simply covers the injuries with elastoplast and allows them to "stew in their own juice," and, as a result, has reduced pain, cicatrization, nurses' work, period of disablement, and bill for dressings. Some years ago I convinced myself of the harm done by removing gauze dressings from ulcers, by agitating the dressings with normal saline, centrifuging the extract, and discovering that it contained huge numbers of epithelial cells torn presumably from the healing edges.

A piece of steak will not smell if buried under boric acid powder, and so, if the wounds of osteomyelitis and compound fractures are packed with boric acid crystals or powder, the smell will be controlled for a considerable period of time. In one case under my care it was not possible to apply the boric acid effectively because of a very extensive circumferential loss of skin over the leg in association with compound fracture. The odour problem was solved in this case by making a wooden trough for the leg in its plaster case and burying the leg and plaster under china clay powder. When it was dug out, six weeks later, it was amazing to find what natural processes had done, with the help of a few implantation skin grafts.

Since the days of Lister the daily use of antiseptic gauze dressings for already infected wounds has caused endless suffering and little good. Certain it is that the time is coming when we shall look back upon the daily dressing with the same feelings as we now look back upon the barbarity of the seton, the flux, and the issue.—I am, etc.,

London, W.1, Nov. 13th. A. Dickson Wright.

Sir,—I would like to add to the remarks of Mr. Blundell Bankart in your issue of November 12th. I have under my care a child who, eight months ago, incurred a burn involving the entire integument of the right arm and about half the forearm. For five months daily dressings, which eventually came to require general anaesthesia, failed to abate the atrocious odour which filled the whole ward, and no healing had taken place, in spite of numerous grafting operations. When the surgeon in charge went away for his holiday in August he transferred the case to me, and my first act was to apply an elastoplast bandage to the whole length of the limb. For two days the stench grew worse, and then quite suddenly disappeared, until the pressure of the discharges forced them through the bandage. Provided the discharge is simply wiped away from the outside of the bandage the odour is negligible, but if it is allowed to soak into a layer of wool it rapidly becomes fetid. On removal of this occlusive dressing it is found that the interior is odourless, a biological balance, evidently analogous to that which eventually takes place in stagnant water, having been established. The dressing has been changed at intervals of not less than fourteen days, and epithelialization is now nearly complete.—I am, etc.,

Hove, Nov. 12th. J. H. Twiston Davies.

Ossification of the Achilles Tendon

Sir,—The condition of ossification of the tendo Achillis, described by Mr. Mallinson in the *Journal* of November 5th, though very rarely reported, is well recognized, and since it is usually unassociated with symptoms it is probably much more common than is thought. Cases have been described by Steiger, Jacobsthal, Meyers, Irwin, Horing, and Densow, and I reported an exactly analogous case to the British Orthopaedic Association in October, 1931. Both Achilles tendons had been tenotomized twenty years earlier by Sir William Mitchell Banks, and both had ossified. The pathology is quite clear, and two types must be distinguished. The first type is traumatic in origin: the Achilles tendon has avulsed the periosteum from the os calcis, and new bone is formed within the new limits of the periosteum, adjacent to but not necessarily continuous with the os calcis. This is the condition of "myositis ossificans," which may be observed not only at the elbow, but at any joint where muscles and tendons are attached to periosteum.

The case under consideration is quite different; there is no association with the os calcis, and it is a true example of heterotopic bone formation. Tendinous tissue has normally a poor blood supply and a low metabolic rate. If in the centre of a tendon the blood supply is still further reduced by fibrosis, calcium is deposited as it is in any fibrous area with a sufficiently low metabolism. Such fibrosis can arise from simple tenotomy, repeated slight trauma, or infection. Some tendons lie in such a confined space that distension with calcium immediately gives rise to pain—for example, the supraspinatus. In the tendo Achillis there is ample room for expansion, and the amorphous calcium remains undisturbed for years. In the course of time as the salts become crystalline they act as a local irritant, new blood vessels develop, and hyperaemia results. Leriche and Policard have shown that where there is an excess of calcium and an adequate blood supply bone is bound to develop. The pathology is therefore identical with that of ossification of the semilunar cartilages, intervertebral disks, abdominal operation scars, and so on.

The point of particular interest in Mr. Mallinson's case is the superimposed injury. It is almost inconceivable that a rod of bone could be fractured by the strictly longitudinal strain of contraction of the muscle which is its host. Unlike the patella, there is no other bone over which it could be snapped. Not only so, but these bony deposits are frequently developed from more than one nucleus, and are therefore segmented. Is it not more probable that this is a case of rupture of a tendon between two nodules of bone, the deposit of bone having reduced the extensibility of the tendon and so predisposed to rupture?—I am, etc.,

Liverpool, Nov. 7th. R. Watson Jones.

Fractures of the Mandible

Sir,—May I be allowed a few words on the subject of fractured mandible in connexion with Dr. Lambert's letter in the *Journal* of November 5th?

I have had some experience in this fracture since 1914, and like to see the patient as soon after the injury as possible. If great tumefaction is present I do not attempt to take an impression until it shows signs of subsiding, generally about the third or fourth day; but it is advisable to obtain it as soon as possible, since, after a week or so, adhesions and muscular contraction may become pronounced and reduction of the fracture be more difficult. The question of an anaesthetic for the impression and cementation of the cap splint is a matter of the personal equation of the patient and the amount of displacement. Either a general or a local anaesthetic may be given; again the circumstances of the case should decide. I endeavour to cement a cap splint as soon as possible—within twenty-four hours of taking the impression.

In my early days I always removed the tooth on each side of the fracture, but have learnt that it is not always necessary. In fact, I now only extract such a tooth when actually in the line of the fracture—probably an

oblique one. Union takes place between the ends of the broken ramus, so I fail to see how the presence of a tooth in the alveolar process is going to prevent union. Experience proves that it does not. An *x*-ray photograph should always be taken, not only to see the extent and situation of the fracture and the amount of displacement, but to discover any peculiarity of the part.

I have in mind a particular case years ago where *x*-ray examination was omitted. The fracture was in the bicuspid region on the left side, with two or three teeth missing. A cap splint was cemented, which I consider the best method of treating these fractures when any teeth are present. Union had not taken place in four weeks, but a large abscess had formed over the fractured area and was pointing on the face. At this stage an *x*-ray photograph was taken, and this showed an unerupted bicuspid lying horizontally, well down in the ramus, with half of the tooth, which was intact, in each half of the fractured jaw. The abscess was opened, the cap splint taken off, and the bicuspid surgically removed ; next, the cap splint was re-cemented, and union occurred. —I am, etc.,

Nottingham, Nov. 7th. JOHN BATTERSBY, M.B., L.D.S.

SIR,—Will you permit me to reply to Dr. Wright Lambert's letter in the *Journal* of November 5th, as I opened the discussion on fractures of the mandible at the Medical Society.

Your report of my paper was incomplete: the method of treatment by wiring was not referred to, while it was suggested that splints only were used. The method of firmly wiring the mandible to the maxilla is so far superior to the use of splints that it should be used in all cases except those easily dealt with. The wiring is done at one operation under a general anaesthetic. Wires of stainless steel or brass are passed around the necks of selected teeth, the two ends are twisted firmly on to each tooth, and the twisted wires of teeth in the opposing jaws are twisted together to obtain the correct position. The fixation of the mandible allows free movement of the tongue, so that swallowing and coughing can be carried out without pain. The latter is most important (was particularly so during the war) for prevention of septic pneumonia.

The introduction of a splint is a prolonged procedure. Impression-taking is painful. Application of the splint is both difficult and painful unless a general anaesthetic is given. The fixation by means of a splint is rarely as effective as wiring. The position obtained by wiring is most favourable, for the lower teeth fit accurately against the upper ones, and provide the most perfect position of the mandible possible to obtain, both for the fragments and for the muscles.—I am, etc.,

London, W.1, Nov. 10th. W. WARWICK JAMES.

Radiology in Dentistry

SIR,—Dr. James Brailsford, in a paper on radiographic investigation in the *Journal* of November 5th (p. 827), deals at some length with the important question of that somewhat unstable tetrad, patient-doctor-dentist-radiologist. No one will disagree with his main thesis that the patient's health is "our first and chief care." Few of us would object to his statement that a radiologist is independent and unbiased, if by that he means that he has no possible motive for hoping that a doubtful tooth is harmless enough to save. But some of his other contentions are less sound, and are couched in a form that is not calculated to further that understanding and co-operation between physician and dentist which is so desirable for the patient as well as for ourselves.

The paragraph to which I take particular exception is the following:

"Apart from the fact that the radiologist has far more experience than the practising dental surgeon can possibly obtain, he, unlike the dental surgeon, is a medical man, familiar with the dangers of dental sepsis to the general health, and, perhaps most important, his opinion is unbiased and independent."

This paragraph is almost entirely untrue. Radiographic diagnosis is built on clinical experience. The first dental radiographer in England, C. A. Clark, was a dentist ; if he had not been, I venture to think that he would have found the task of interpreting his radiographs very much heavier, if not entirely hopeless. Subsequent workers have built upon his foundation a very considerable knowledge of the radiographic appearance of dental conditions, but no one without a fairly intimate knowledge of clinical appearances can hope to contribute to this. The radiologist who has no opportunity of correlating his radiographs with history, detailed symptoms, and morbid anatomy cannot call his vast collection of skiagrams "experience." I have in my practice a patient with a demonstrably vital tooth labelled "dead, septic, apical abscess" by a radiologist whose ability I hold in high esteem.

The next statement is even more misleading. It assumes that the dental curriculum takes no account of the relation of the teeth to the general health. I assure Dr. Brailsford that if he would attend any clinic at any dental hospital he would hear more about this very important subject in a day than he would in several weeks at the average out-patient clinic of a general hospital. I speak from personal knowledge of both. The real point is this: one may have medical and radiological qualifications and yet be an indifferent dental radiographer, just as one may have a dental qualification and be incompetent—it depends on the man. Dr. Brailsford would seem to take the rather one-sided view that all radiologists are competent and all dentists incompetent in the sphere of dental diagnosis ; this at least was the impression his article gave me, so I imagine it would convey a somewhat similar one to the average medical practitioner. It is to be feared that if such practitioners follow Dr. Brailsford's advice they will continue, in accentuated form, the already too prevalent practice of referring patients over the dentist's head, and often without his knowledge, to a whole-time radiologist for an unbiased and independent opinion, thereby depriving themselves of information of possible value, as well as putting the dentist in a false position.

May I urge medical practitioners to take the middle course of giving the patient's dentist a chance to show his competence, and only as a last resource to take the case out of his hands.—I am, etc.,

London, W.1, Nov. 10th. NORMAN J. AINSWORTH.

Aluminium and Health

SIR,—Dr. C. B. Heald's letter in your issue of November 12th certainly suggests the "acid test" regarding the vexed question of the effect, on some individuals, of food cooked in aluminium utensils. Thirty years ago, when aluminium was practically unknown in culinary use, it was no unusual thing to be consulted by patients who complained of "malaise" of a definite nature, which occurred "immediately after taking food" Seeing that this subject is now causing considerable perturbation owing to its ventilation in the public prints, it might be of no small assistance to the general practitioner if a full list of the characteristic symptoms of this "malaise of a definite and *easily recognized* nature" (italics mine) were authoritatively described, say, by a medical sufferer.—I am, etc.,

W. W. SHRUBSHALL, D.P.H.

Burgess Hill, Sussex, Nov. 12th.

Deaths of Merchant Seamen

SIR,—" The age distribution of merchant seamen," as your leader of October 22nd remarks, " differs too widely from that of the general population " for their death rates to be directly comparable. Luckily the ages of " all males, occupied and retired," in England and Wales were given in the " occupational mortality " Blue Book for 1921, and those for seamen in their census for 1921.

I may say that the middle or average age for " all males " was about 36.5, for seamen about 32. The death rate of merchant seamen 16 to 65, younger as they are, and so in greater proportion at a period of lower death rates, should be three-quarters, or 75 per cent. of that of the general male population ; therefore, when it is claimed in the recent report merely that the deaths of British merchant seamen are not excessive, and precise comparative figures are not given, one may be forgiven for doubting whether an exact quantitative comparison has been made. This new Blue Book is most valuable ; it gives us, for the year ending September 30th, 1930, a carefully edited and correct list of the deaths of seamen, both occupied and retired, which we have never had before. Of seamen occupied—that is, employed at sea—642 died, half of them usually from accident. In fact, 295 died of disease (Table VII, p. 39), but as soon as they are relieved from the great risk of the seaman, death from accident, not 295, but 625 die in the year—298 of them within three months of their leaving the sea. Surely many of these deaths are of men who left their ships sick. The low death rate of Table VII is therefore to some degree due to the deaths of these men, delayed till they had left the sea, so their deaths were not recorded with those of the " occupied " seamen by the Board of Trade, but with those of the " retired " by the Ministry of Health through the local registrars. From what diseases did these 625 die? From Tables V (p. 64) and VII (p. 39) we learn that the chief deaths of British merchant seamen are from:

	Total	Occupied	Retired
Heart and circulatory diseases ...	622	37	585
Cancer	347	10	337
Disease of nervous system (in 1930) ...	329	14	315
Phthisis	302	22	280
			1,517

These together account for more than half the deaths of retired seamen, and the maxima of the first three fall among the ages over 65,[1] but that of phthisis between the ages 25 and 54. The report points out that 68 per cent. of the 625 who died in the first year after leaving the sea were under 55, so probably many of the 625 died of phthisis. Of phthisis, twenty-two died among " occupied " seamen, 280 among " retired "—1 " occupied " to 12.7 " retired." In the Navy in 1929 there were nineteen deaths and 228 invalided—1 to 12, a proportion very similar ; but whether that means anything who could tell on one year's figures?

The report does discuss (pp. 42 and 43) the occurrence of deaths at ages from heart and circulatory diseases and cancer, but, surprisingly, nothing is said about the frequency of phthisis—nothing that one has been able to find. I submit that, to enable us to understand this unexpected flow of deaths so immediately following retirement, we should be told the causes of the 298 deaths, grouped by ages as in Table XVII ; this could be easily prepared now, as the death certificates from which the table was built up are probably still readily available.—I am, etc.,

W. E. HOME,
Fleet Surgeon.

Tunbridge Wells, Nov. 7th.

[1] See *Occupational Mortality*, 1921, p. 2.

Genital Prolapse: Value of Exercises

SIR,—I was greatly interested in the late Dr. Leith Murray's lecture on genital prolapse in the *Journal* of October 22nd, and more particularly in his stressing the fact that parturition may be followed by subinvolution of the pelvic floor apart from descent of the uterus. Many obstetricians advocate post-partum exercises, whose purpose seems more that of preventing femoral thrombosis than to assist the involution of the pelvic floor and uterus. As Dr. Leith Murray did not particularize about exercises, I am prompted to mention a few that my experience has shown to be very efficacious.

Uterine involution is promoted by gentle centripetal manipulations (not ordinary massage) applied to the uterine fundus through the anterior abdominal wall for about two to five minutes daily from the second day after delivery onwards. (Old cases of enlarged flabby uterus usually yield to the same treatment.)

The pelvic musculature and uterus can be improved after the first few days by gentle, passive leg circumduction, followed by active leg raising (both legs simultaneously), lifting the heels off the bed, first a few inches, and then daily increasing the range of movement. Before beginning this exercise the patient should attempt to retract and lift upwards her abdomen and contract the muscles of the buttocks. The pelvic floor itself is best acted upon by the following exercise: the patient lies on her back with both thighs and legs flexed to a right angle and abducted. She then adducts her knees against resistance applied at the medial surface of the knees. During this, and to intensify the effect, the patient should raise her pelvis a few inches off the bed, for in this position the exercise causes a powerful contraction of the levator ani muscle. (This is an old exercise of the Ling school.) In chronic cases in which there is a great deal of prolapse of the vaginal wall this should be digitally replaced as fully as possible before the exercises are begun. Further, stimulating nerve frictions on the sacral and coccygeal regions reflexly improve the tone of the pelvic floor.

Almost immediately the patient regains some sense of control in the pelvic region, and frequency of micturition, that is so distressing in old cases of subinvolution, is often speedily improved.

—I am, etc.,

A. KELLGREN CYRIAX,
Physician in Charge of Mechanotherapeutic Department, Elizabeth Garrett Anderson Hospital.

London, W.1, Nov. 2nd.

Modern Aids to Anaesthesia

SIR,—May I have space in which to correct a wrong impression given by your reporter of remarks made by me at the Section of Anaesthetics on November 4th? I did not say that " nothing was to be gained by giving a combination of drugs," a process which I practise daily. I did object to the word " synergism " and the particular and elaborate combination of drugs and methods for the description of which the term was first introduced.—I am, etc.,

J. BLOMFIELD.

London, W., Nov. 12th.

Retinitis Pigmentosa

SIR,—In the *Deutsche medizinische Wochenschrift* of October, 1931, F. Wibaut of Amsterdam describes a series of cases of retinitis pigmentosa treated by means of the " feminine hormone " (menformon). In further papers in the *Nederlandsch Tijdschrift voor Geneeskunde* he again describes the treatment of this condition, and claims remarkable successes. Out of thirty-one cases treated with menformon he cured eight and considerably benefited thirteen. As retinitis pigmentosa has always been regarded as an incurable malady with a hopeless prognosis,

may I inquire from British ophthalmologists whether they have used this treatment, and with what results?

I may add that I have recently been treating one case of retinitis pigmentosa with large doses of "feminine hormone" (progynon) both by intramuscular injection and per os, but without any benefit. Of course one can draw no conclusion whatever from one case, and for that reason I would very much like to know the experience of others, for if the above-named investigator's results are substantiated a great step in the therapy of retinitis pigmentosa will have been taken.—I am, etc.,

M. M. Posel, M.D., M.R.C.P.Lond.

Johannesburg, Oct. 14th.

Obituary

HENRY AMBROSE LEDIARD, M.D., F.R.C.S.

Consulting Surgeon, Cumberland Infirmary

A picturesque and forceful personality of the old school has passed away through the death of Dr. Henry Ambrose Lediard of Carlisle, within a few days of his eighty-fifth birthday. Although he had been closely associated with the life of Cumberland for more than half a century, Dr. Lediard was not a North of England man by birth, and his temperament was such that he never quite reconciled himself to northern ways; nevertheless, he gained the esteem and affection of the citizens of Carlisle to an unusual degree. He was born in Cirencester, the son of a solicitor, and was educated at Cheltenham, afterwards proceeding to Edinburgh for the study of medicine. During Lediard's last two years as a student at Edinburgh the great Lister filled the Chair of Clinical Surgery at the university, and made a life-long impression upon the young student. Incidentally he was fond of recounting that it was from Carlisle that Lister obtained the crude carbolic acid with which he began his experiments in antiseptics. Lediard obtained the M.B. degree at Edinburgh in 1870, and the doctorate five years later, and became a Fellow of the Royal College of Surgeons of England in 1876. After holding a house appointment at Edinburgh Royal Infirmary for a couple of years, he came to London to be medical superintendent of the Central London Sick Asylum in Cleveland Street.

Dr. Lediard's connexion with Carlisle began in 1880, when he entered into partnership with two well-known medical men in that city, Drs. Page and Macdougall, and three years later, on the death of one of them and the breakdown in health of the other, he succeeded to the entire practice. He followed one of his partners as surgeon to the Cumberland Infirmary, a post which he occupied for fifty years. On his retirement a year or two ago he was appointed consulting surgeon and at the same time elected vice-president. His work for the infirmary was noteworthy in several aspects. It was through his instrumentality than an *x*-ray apparatus was installed there as early as 1897, and he engaged himself heart and soul in everything that had to do with the development of the institution. He also became, very soon after his settlement in Carlisle, medical officer to what was then the London and North-Western Railway. Another appointment of his was that of Post Office medical officer, and he also served as prison doctor. During the war he gave generously of his services for the benefit of the wounded soldiers in the local military hospitals, and he showed his enthusiasm for local defence by joining the volunteers—although he was approaching the age of 70—and regularly taking part in the drills.

Dr. Lediard was a man of strong character, independent mind, unconventional manners, and determined outspokenness, never able to suffer fools gladly. In the field of the intellect he was strikingly modern in his outlook, but he had a conservatism in certain respects which was almost carried to eccentricity. He detested the motor car, and to the last drove about in a horse-drawn victoria, the last vehicle of its kind to be seen in the city and district. He had a highly cultured mind, a discriminating judgement in matters of art and music (his family included some brilliant musicians), and he was ever tolerant towards new voices, and ever ready to welcome a new star in the literary firmament. For example, long before Joseph Conrad gained general recognition, Dr. Lediard described him as the greatest romantic writer of his day. He played a useful part in the public life of Carlisle, notably in connexion with the library and museum, and as a magistrate on the Bench.

The remains of Dr. Lediard were cremated at Darlington, and the ashes privately interred at Keswick. A memorial service in Carlisle Cathedral, attended by the mayor and corporation in state, and by a large representation of the medical profession and staff of the infirmary, showed what deep root he had taken in the affections of the city of his adoption.

JOHN C. KING, L.R.C.P. & S.Ed.

Glenageary, County Dublin

The death is announced at his residence, Gosworth, Dalkey, County Dublin, of Dr. John Charles King, who for forty years was medical officer of health for Castlepollard and Coole, County Westmeath. Born in 1858, he was the youngest son of the late Mark King, Elistron Lodge, Roundstown, County Galway, coming of an old Connaught family, the clan name of which was the MacConre of Gnomore. Educated at the Jesuit College, Galway, and the Royal School, Banagher, he decided upon a medical career, and began his studies to that end at Queen's College, Galway, later going to Edinburgh, where he qualified in 1882. During the great war Dr. King served as a captain in the R.A.M.C., and was on several occasions commended for the excellence of his work and devotion to duty. Three of his sons served with the combatant forces, and one of them, Captain Edward King, was seriously wounded. In the campaign against tuberculosis Dr. King took a very active part in the work inaugurated in Ireland by the Marchioness of Aberdeen. He was in his time one of the most energetic medical politicians. While President of the Poor Law Association he served on several deputations to the House of Commons and to the Irish Local Government Board.

Dr. King was an active member of the Leinster Branch of the British Medical Association, a member of the Council of the Irish Medical Association, and also a member of the Irish Medical Committee. After his retirement from practice in 1925, he travelled extensively abroad. Two of his sons are in medical practice in England, and a third son is studying medicine in Dublin University.

F. M. GARDNER-MEDWIN, B.A., M.R.C.S.

Medical Officer, Denbighshire Infirmary

Dr. Frank Medwin Gardner-Medwin of Angorfa, St. Asaph, N. Wales, died in London on November 11th after an operation. Dr. Gardner-Medwin obtained the B.A. Cambridge in 1900, being an undergraduate of Trinity College. He afterwards entered St. Bartholomew's Hospital, and qualified M.R.C.S., L.R.C.P. in 1903. Taking up practice in Liverpool he devoted much time to anaesthetics, being on the staffs of the Royal Infirmary and the Royal Southern Hospitals. During the war he served with the R.A.M.C. in Egypt, and on his return to England took up private practice in St. Asaph, where he remained until his death. He was on the staffs of the Denbighshire

Infirmary and the Alexandra Hospital at Rhyl, and had a wide reputation as a clinical physician. He is survived by his wife and two sons.

J. B. B. writes: With the passing of Frank Gardner-Medwin the profession becomes poorer, for in him were in full measure the qualities of the beloved physician. Throughout his professional life the welfare of his patients was his chief consideration, and there can have been few who thought more of those in his care and less of himself then he. He brought a quick human sympathy and a trained scientific mind to every problem of illness. As an anaesthetist he was in the first rank, fearless but never foolhardy, and he had a wonderful capacity for making the simplest means serve his purpose. This was well exemplified during his service in Egypt, where he also did wonderful work during the influenza epidemic of 1918. The giving of his own blood in an effort to save a case of blackwater fever and the many other instances of unselfish endeavour, though forgotten by him, will ever be remembered by those who knew and loved "Father" Medwin at the 17th General Hospital. In his later years at St. Asaph he had a success such as he loved: a high and well-deserved place in the affection and esteem of a great number of patients who were always his friends.

We have to record the death of Dr. Ferdinand Rees of Saltdean, near Brighton. During the last few years he had not enjoyed good health, and had gone for special treatment to a London hospital. He developed septic pneumonia on November 6th, and died on the following day. Rees was a graduate of Glasgow University, taking the M.B., C.M. in 1889, and the M.D. in 1894. He settled in general practice in Wigan, where most of his life was spent, and held the appointment of honorary physician to the Royal Albert Edward Infirmary, Wigan. He was a most enthusiastic worker, passionately fond of reading, a keen golfer, and interested in municipal affairs of his locality as a town councillor. For many years a zealous member of the British Medical Association, he often contributed letters to the columns of the *Journal*. He served as honorary secretary of the West Cornwall Division from March, 1922, to October, 1923, and was for several years a representative in the Representative Body. Dr. Rees's Wigan colleagues extend their sympathy to his family in their bereavement.

Dr. William Smith of Gateshead, who died on October 30th in his sixty-first year, received his medical education at Durham, graduating M.B., B.S. in 1894. After holding house appointments at the Royal Victoria Infirmary, Newcastle, and the Monkwearmouth Hospital, Sunderland, and practising for a short time at Forest Hall, he went to Gateshead thirty-eight years ago. For twenty-one years he was medical officer of the central district of that town. He was formerly honorary surgeon in the local division of the St. John Ambulance Brigade, a member of the committee of the Gateshead dispensary, and honorary physician to the Gateshead headquarters of the Poor Children's Country Holiday Association. During the war he served for four years with the 2nd Northumberland Field Ambulance in France. He acted as secretary to the Gateshead Panel Committee for some time, and took part in medico-political activities. His efforts were mainly directed towards securing adequate payment for district medical officers under the board of guardians. Dr. Smith was a keen Freemason, a Past-Master of both the Lodge of Industry and St. Mary's Lodge, and Past Provincial Senior Warden of Durham.

Dr. George Stevens Pope of Norwich died on November 5th in his sixty-fifth year. He received his medical education at Manchester and Edinburgh, and obtained the diplomas of the Scottish Conjoint Board in 1888. He specialized in mental diseases, and, after serving as assistant medical officer to the London County Asylum, Cane Hill, and to the "Retreat," York, he became medical superintendent to the County Borough Asylum, Middlesbrough, and to the Somerset and Bath County Asylum, Wells; subsequently becoming consulting physician to Heigham Hall at Norwich. Some years ago he relinquished most of his medical work in order to devote himself to municipal politics. After serving two years as the representative of the Conservative interest of Heigham Ward, he was elected lord mayor in 1924, and at the time of his death was deputy lord mayor and leader of the Conservative party in the city, in which capacity he took part in the recent municipal election campaign. He was a justice of the peace for the City of Norwich, chairman of the District Nursing Association, and a member of the Royal Medico-Psychological Association and of the Norwich Division of the British Medical Association. He served as representative of the Norwich Division at the Representative Meetings of the Association in 1903 and 1904, and was chairman of the Norwich Division for 1925–6.

We regret to announce the death of Dr. Thomas Ernest Hincks of Hay, near Hereford, on November 8th, at the age of 57. He was found dead in the hunting field after a day with the hounds. He graduated M.B., Ch.B. at the University of Edinburgh in 1898, and served as house-surgeon at the Queen's Hospital, Birmingham; he then settled in practice on the borders of Brecon and Herefordshire, becoming medical officer and public vaccinator, and M.O.H. for the Hay Urban District and the Bredwardine and Painscastle rural districts. During the war he served in France and Mesopotamia, with the temporary rank of captain R.A.M.C., and received the Médaille d'Épidemiologie. In 1922 his name became known throughout the country as an important witness at the Armstrong murder trial. In 1928 he was elected president of the Worcester and Herefordshire Branch of the British Medical Association, and his presidential address, entitled "A review of thirty years' rural maternity practice," was published in these columns on August 24th, 1929. Dr. Hincks was a first-rate country general practitioner, esteemed by patients and colleagues, and popular in hunting circles in Herefordshire, Brecon, and Radnor.

Medico-Legal

THE RIGHT TO USE THE INITIALS "B.P."

In the Chancery Division, before Mr. Justice Bennett, on November 10th and 11th, the Attorney-General and the General Medical Council applied for an injunction to restrain Barrett's Proprietaries, Ltd., a firm of manufacturing chemists of Blackburn, from using the initials "B.P." in their advertisements and price lists and on their cartons, in respect of preparations which were not included in the *British Pharmacopoeia*.

The plaintiffs were represented by Mr. Archer, K.C., and Mr. D. C. Bartley, instructed by Mr. C. J. S. Harper. The defendants were not represented, but they put in a statement generally admitting that they had used the initials "B.P." in respect of preparations not in the *British Pharmacopoeia*, but pleading that no person who was aware that the initials "B.P." sometimes referred to that work would ever associate the device used by them with *British Pharmacopoeia* preparations; moreover, to the general public the initials "B.P." stood for various things other than *British Pharmacopoeia*.

Mr. Archer said that the case had a double aspect, the Attorney-General claiming a public right, and the General Medical Council a right in its own property. By the Medical Act the Council was directed to prepare a book containing a list of medicines and compounds. The *British Pharmacopoeia* made no recommendations as to particular drugs for specific illnesses; it simply enabled the medical profession to have a standard to which to refer drugs. The letters "B.P." had a precise meaning the world over, and were so understood by the medical, dental, and pharmaceutical professions. The acts of the defendants were calculated to hinder

the successful performance by the Council of its duty, and to damage its reputation. Moreover, the use of the initials by the defendants was improper and intended to deceive.

His Lordship here remarked that he was unable to see the injury to the General Medical Council. What the General Medical Council sold was a book ; what the defendants sold was a bottle of medicine. The Council was not interested in seeing that a chemist dispensed according to the Foods and Drugs Act ; that was a matter for the local authority.

Counsel replied that there were three rights possessed by the General Medical Council. One was the statutory duty and right of maintaining the *British Pharmacopoeia* as a standard ; another was the copyright in the book ; and the third was the right to special damage when it could prove false representation that drugs were B.P. drugs when they were not.

After further argument, the judge remarked that the General Medical Council was not given a monopoly of the term "British Pharmacopoeia" ; if one chose to call a ship or anything else by that name no action would lie. As to the initials, they designated, for instance, a brand of petrol which had no relation to the *British Pharmacopoeia*. He could not see how the book itself was brought into disrepute by the action of the defendants.

Sir Donald MacAlister, until recently President of the General Medical Council, gave evidence. He was shown advertisements of the defendant firm in chemical trade papers, headed "B.P. Pharmaceutical Specialities," and containing particulars of such preparations as "kill-pain liniment," "children's hair lotion," and "soothing toothache tincture." There were also handed up the national health insurance drug tariff, issued by the Ministry of Health ; the *National Formulary*, issued by the British Medical Association ; and the price lists of pharmaceutical firms of standing, like Allen and Hanburys or the British Drug Houses Ltd., in all of which the initials "B.P." related only to preparations in the *British Pharmacopoeia*. The witness said that the reputation of the *British Pharmacopoeia* had been built up by publication over many years, and by the fact that it was prepared by people of high repute. Before 1860 there were separate *Pharmacopoeias* issued by the Royal Colleges of Physicians of London, Edinburgh, and Dublin. There were differences between these compilations, and therefore it was decided that they should be superseded by one volume under the authority of the General Medical Council. Many of the defendants' preparations were described as preparations for specific complaints, and were of the nature of patent medicines ; but the *British Pharmacopoeia* avoided all therapeutic indications. To have such medicines represented as sold under the letters "B.P." was offensive and depreciatory of the Council's function.

Sir Henry Dale also testified that it would be derogatory to the reputation of the *Pharmacopoeia* that it should be represented as containing such remedies. It was accepted by the whole medical profession as a code book defining the properties of individual drugs and constituents which medical men prescribed.

Evidence was given by Mr. H. N. Linstead and Mr. F. G. Hines, secretary and president respectively of the Pharmaceutical Society. The former said that his attention had been caught by the advertisements, and, thinking that this use of the letters "B.P.," if unchallenged, would give rise to confusion, and possibly to fraud, he sent on the information to the General Medical Council. Mr. Hines said that the description "B.P." contained only one thing to his mind—namely, the standard of the *British Pharmacopoeia*. He admitted that the advertisements would not mislead him, because he knew that the substances in question were not to be found in the *British Pharmacopoeia*. At the conclusion of Mr. Hines's evidence the judge remarked, "He wants to say, what he will not be allowed to say, that, in his opinion, the public will be misled."

Counsel, in a closing speech, mentioned that the defendant firm was originally Barrett, Peter, Ltd., but Mr. Peter dropped out, and therefore, he suggested, the word "Proprietaries" was adopted as part of the registered name because it enabled the firm to continue to use the initials "B.P." His Lordship said that he did not see anything sinister in the change of name. Counsel, while admitting that there would be no confusion in the mind of a good doctor or of a good chemist, maintained that the use of the initials was capable of deceiving anyone capable of being deceived—that is, anyone who knew something about the *British Pharmacopoeia*, but not enough about it.

Judgement for Defendants

His Lordship dismissed the application for an injunction. Nothing had been proved or alleged by the plaintiffs which enabled him to say that what the defendants had done was calculated to defeat the successful performance by the General Medical Council of its statutory duty under the Act to publish and keep up to date the *British Pharmacopoeia*. Sir Henry Dale's statement in the witness-box was that the *Pharmacopoeia* did not contain specific remedies, such as the defendants advertised, but he had not shown, and could not show, that the medical profession was misled by the defendant's publication. The Attorney-General came into the case to prevent the public from having foisted upon them something which was not of the standard prescribed in the *British Pharmacopoeia*, but as to what the public understood by the letters "B.P." he had no evidence whatever. It was alleged that the defendants had acted fraudulently. His Lordship was not disposed, on the evidence before him, to make such an inference. No ground had been established on which he could properly grant an injunction.

Medical Notes in Parliament

[From our Parliamentary Correspondent]

The first session of the present Parliament was prorogued on November 17th after lasting just over a year. A new session will be opened on November 22nd.

The House of Commons this week carried the Determination of Need Act, dealing with the "means test" and approved duties under the Import Duties Act.

Royal Assent to the Edinburgh Royal Maternity and Simpson Hospital Order Confirmation Act was given on November 15th.

On the same date the Ottawa Agreements Act also received the Royal Assent, and on November 16th the Treasury issued an Order postponing till further notice the imposition of duties under this Act upon linseed, cod-liver oil, castor oil, coco-nut oil, and also magnesium chloride.

NATIONAL ECONOMY

Report of Committee of Private M.P.'s

A committee of private members of Parliament, under the chairmanship of Sir Gervais Rentoul, has, with the approval of Mr. Neville Chamberlain, examined national expenditure in search of possible economies. Their report was issued on November 17th. It points out that to effect wide changes of policy certain legislation already on the Statute Book must be revised or even repealed. Among the remarks of the report are:

School Medical Service.—"Whilst we recognize that the school medical service is all-important to the well-being of the children, we consider that the cost of the present service is too high, and we wish especially to point to the attitude of the British Medical Association with regard to salaries."

Army Medical Services.—"We recommend that it should be carefully considered whether it would not be possible to amalgamate the two separate directorates of hygiene and pathology in the Army Medical Service."

"Whilst agreeing that the Army and Navy had widely different requirements, which cannot be dealt with by a common service, we are of opinion that large economies might be realized by a common service of hospitals, medical stores, etc., and that doctors for both services might be recruited under a single directorate."

Territorial Medical Officers.—"We consider that it should be possible for the duties of adjutants for medical personnel in the Territorial Force to be performed by experienced Territorial medical officers."

Board of Control.—"The total cost of the lunacy system amounts on an average to £500 per annum per inmate. As the result of our investigations we consider that the above figure should be greatly reduced, and strongly urge that an inquiry should be made as to how this money is expended. . . . Charitable institutions show charges of from 15s. to 18s. a week for ordinary mental defectives. Emphasis should be laid on the value of such charitable institutions, and encouragement of them should be a cardinal principle of policy. The efforts of the voluntary associations under the Mental Deficiency Acts, in the care and guardianship of mental defectives, should be encouraged. The capital cost of new institutions, when required, seems to us excessive. . . . The main scope for economy lies in reduced building costs and a simpler standard of equipment, in an extension of the practice of boarding out for mild cases, in a stricter system of payment according to means, and in encouragement and development of charitable effort. It is considered that the cost of administration is excessively high, and should be reduced."

Local Government Expenditure.—A recommendation is made that all grants to local authorities under the Local Government Act and otherwise should be cut by 5 per cent. in 1933–4; by 10 per cent. in 1334–5; and by 15 per cent. in 1935–6. The committee also recommends that local government expenditure as a whole should be subject to a similar cut of 15 per cent. spread over three years.

Post-Graduate Medical School

On November 11th Sir ERNEST GRAHAM-LITTLE asked the Minister of Health "whether in view of the present need of retrenchment exemplified by the cuts made and contemplated in every department of public expenditure, and in view of the development since the Athlone Committee reported of numerous agencies for supplying post-graduate teaching at the constituent medical schools of the London University, it is proposed to proceed with the foundation of the Post-Graduate Medical School at Hammersmith; and, if so, what is the amount of the contribution to be made by the Exchequer?"

Sir HILTON YOUNG replied: "The answer to the first part of the question is in the affirmative. As regards the second part, the maximum of the Exchequer grant for the building and equipment of the school will be £100,000."

Motor Accidents and the Hospitals.—On November 8th a discussion arose in the House of Lords on a motion by Lord Buckmaster that it was essential for the safety of the public that further steps should be taken to control motor traffic. Viscount CECIL said that during the last few months he was in a distant part of the country, and was requested to go into the village hospital. He asked whether they had many motor cases, and was told, "Oh, yes, the whole hospital is crowded out with accidents from the motors." He said, "Do you receive any payments in respect of the treatment of these accidents?" They replied, "Never." That was a striking fact which ought to be borne in mind. The Earl of PLYMOUTH stated that a special investigation into the causation of accidents over a substantial period was now being embarked on, and from this valuable results ought to be obtained which should serve as a guide for future legislation. The motion was carried.

Fatal Motor Accidents in England and Wales.—Replying, on November 10th, to Viscount Cranborne, Sir JOHN GILMOUR stated that during the year ended December 21st, 1931, 2,860 persons, other than those on any vehicle or horse involved, were killed in street accidents attributed to motor vehicles in England and Wales. He pointed out that when the Road Traffic Act was before the House some proposal had been made for imposing on coroners the duty of finding out whether the pedestrian or motor vehicle was responsible for the accident, but this proposal had been defeated.

Bermuda Medical Staff.—On November 8th Captain BALFOUR asked whether, in the interests of economy, the establishment of three medical officers of the Royal Army Medical Corps stationed at Bermuda could be reduced by arranging for the co-operation of the civil medical staff of the island. Mr. DUFF COOPER said the establishment of the troops at Bermuda was twenty-eight officers and 416 other ranks. The question of co-operation by the civil medical staff had been investigated, but had not been found practicable under the local conditions.

Sewage in the Clyde.—On November 8th Mr. LEONARD asked if the attention of the Secretary of State for Scotland had been drawn to the decision of the Glasgow Corporation to allow 35,000,000 gallons of sewage to enter the Clyde per day without chemical treatment. Mr. SKELTON presumed that the question referred to the sewage discharged from the Dalmuir Sewage Works of the Corporation of Glasgow. He was informed that while the chemical treatment at one point in the process of purification had been discontinued, the methods hitherto followed remained otherwise unchanged. The matter was not one in which the Department of Health for Scotland could take any action unless a nuisance were to arise in the sense of the Public Health (Scotland) Act, 1897. In that event the question of remedial measures would fall to be considered in the first instance by the Public Health Department of Glasgow Corporation.

Herbalists' Claim for Registration.—In reply to Mr. Tinker, on November 10th, Sir HILTON YOUNG said that a copy of the letter he received from the National Association of Medical Herbalists of Great Britain, Limited, was sent by his direction to the Registrar of the General Medical Council on April 26th, 1932, for the information of the Council, because the letter put forward a claim by the Committee of the National Association for registration as a teaching and practising body.

Chemical Defence Research.—In an answer to Mr. Tom Williams on November 11th Mr. DUFF COOPER said the War Office had arrangements with certain manufacturers whereby respirators were assembled and chemicals for testing those respirators were obtained. The only institution at which research work was done on chemical defence was Oxford University.

Post-dating Certified Milk.—On November 14th, Mr. SHAKESPEARE, replying to Captain McEwen, said that the Minister of Health was not aware that the practice of post-dating bottles of certified milk was increasing. If any case in which this was being done was brought to his notice he would take steps to secure compliance with the provisions of the Order. The Minister had received some representations suggesting alteration of the requirement that the date of production must be stated on all bottles. These would be considered in conjunction with other proposals when an opportunity arose for the amendment of the Order.

Maternal Mortality in Stepney.—On November 14th Mr. POTTER asked the Minister of Health whether, in view of the mortality and morbidity in childbirth in the borough of Stepney, he would call for reports from the medical officers of health as to the advisability of establishing a municipal birth control clinic in that borough. Mr. SHAKESPEARE replied in the negative. Local authorities had no general power to establish birth control clinics as such.

Foot-and-Mouth Disease.—Dr. ELLIOT stated on November 14th that a case of foot-and-mouth disease at Melton Mowbray was confirmed on November 9th. There had been no other case in the area since.

Maternity and Child Welfare Grant.—On November 15th Mr. SHAKESPEARE told Mr. Parkinson that under the Local Government Act, 1929, separate grants for maternity and child welfare services, other than the training of midwives and health visitors, ceased to be payable in respect of any year after the financial year 1929–30. The amount of the discontinued grant formerly paid by the Exchequer in respect of those services was included in determining the loss on account of grants under the Act.

Notes in Brief

One thousand and nine houses in Edinburgh which have been condemned as unfit for human habitation are still occupied.

During the quarter ended September 30th last, 309 persons were killed in road accidents in the Metropolitan police district and the City of London.

Universities and Colleges

UNIVERSITY OF OXFORD

An examination for the Theodore Williams Medical Scholarship at Pembroke College will begin on February 21st, 1933. The scholarship is of the value of £100 a year, and is tenable for four or five years. Full particulars can be obtained on application to the Senior Tutor, Pembroke College, Oxford.

UNIVERSITY OF CAMBRIDGE

Professor H. R. Dean, M.D., Master of Trinity Hall, and Dr. T. S. Hele have been elected to the Council of the Senate.

UNIVERSITY OF LONDON

A course of five lectures on "Bacteria in nature" will be given by Professor F. W. Twort, F.R.S., superintendent of the Brown Institution, at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C., on December 1st, 2nd, 5th, 6th, and 7th, at 5 p.m. Admission to the lectures is free, without ticket.

University College

Sir Arthur Smith Woodward, F.R.S., will preside at the first of the two lectures on sinanthropus to be given by Professor Davidson Black, F.R.S., of the Peiping Union Medical College, China, on December 9th and 12th, at 5.30 p.m. The lectures, which will be illustrated by lantern slides, are addressed to students of the University and to others interested in the subject. Admission is free, without ticket.

UNIVERSITY OF SHEFFIELD

Dr. Duncan Cameron has been appointed honorary demonstrator in anatomy.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

An ordinary Council meeting was held on November 10th, when the president, Sir Holburt Waring, was in the chair.

Diplomas of Membership were granted to 129 candidates. Diplomas in Public Health were granted jointly with the Royal College of Physicians to fifteen candidates. (The names were printed in the report of the proceedings of the comitia of the Royal College of Physicians of London, in our issue of November 5th, p. 860.) A Diploma in Gynaecology and Obstetrics was granted jointly with the Royal College of Physicians to Albert Leslie Watson of Sydney University.

Mr. Gerard Sutherland Irvine, until lately a student at Epsom College, was nominated as the fortieth Jenks Scholar.

Sir Cuthbert Wallace was elected a member of the Committee of Management in the vacancy occasioned by the retirement of Mr. Steward.

The Bradshaw Lecture, on experiences of the surgery of the sympathetic nervous system, will be delivered by Mr. G. E. Gask, at 5 p.m. on December 15th instead of on December 8th.

The Buckston Browne Dinner

The fifth Buckston Browne annual dinner of Fellows and Members was held on November 10th at the College, with the president, Sir Holburt Waring, in the chair. Formal speeches were not made, but the President extended a general welcome to the guests on behalf of the Council, and paid a warm tribute to the generosity of Sir Buckston Browne, the donor of the banquet, whose benefactions to the College have now reached the sum of £100,000. The President added that the research scholars' work was justifying their appointments. The building of the Buckston Browne surgical farm at Downe was complete, and it was hoped that the equipment would soon be complete also. After referring to the generous gift of £10,000 from the Pilgrims' Fund, and to the Leverhulme research scholarships, the President proposed the health of the founder of the banquet. Sir Buckston Browne, in a brief reply, said that his idea of an annual dinner to bring together Fellows and Members had materialized thanks to Lord Moynihan and the Council, and Sir Holburt Waring had taken a personal interest in it from the beginning. On this day of the year all were equal in the Royal College of Surgeons of England. The following is a complete list of those present:

Council: Sir Holburt Waring (President), Mr. W. Sampson Handley and Sir Percy Sargent (Vice-Presidents), Lord Moynihan (Leeds), Sir John Lynn-Thomas (Cardiff), Mr. Ernest W. Hey Groves (Bristol), Sir Cuthbert Wallace, Mr. F. J. Steward, Mr. C. H. Fagge, Mr. R. P. Rowlands, Mr. G. E. Gask, Mr. Wilfred Trotter, Mr. A. H. Burgess (Manchester), Mr. V. Warren Low, Mr. Victor Bonney, Mr. G. Grey Turner (Newcastle), Mr. Hugh Lett, Mr. Leonard Gamgee (Birmingham), Mr. R. G. Hogarth (Nottingham), Mr. R. E. Kelly (Liverpool), Mr. Graham Simpson (Sheffield), Mr. A. James Walton, Mr. A. E. Webb-Johnson, Mr. G. Gordon-Taylor.

Fellows: Mr. N. R. Barrett, Mr. W. H. Bowen (Cambridge), Sir Buckston Browne, Mr. Digby Chamberlain (Leeds), Mr. F. Curtis (Redhill), Mr. E. Pearce Gould, Mr. Russell J. Howard, Lieut.-Colonel C. H. James (Redhill), Mr. A. Rocyn Jones, Mr. R. Kennon (Liverpool), Dr. C. E. Lakin, Mr. Clifford A. Moore (Bristol), Mr. John Murray, Mr. W. F. Neil (Nottingham), Sir Henry Newland (President of the Royal Australasian College of Surgeons), Mr. Robert Ollerenshaw (Manchester), Mr. J. F. O'Malley, Sir Arthur Mayo Robson, Mr. J. Paterson Ross, Mr. Walter G. Spencer, Mr. Julian Taylor, Mr. Philip Turner, Mr. Cecil P. G. Wakeley, Sir Henry Wellcome, Mr. B. W. Williams, Mr. Gwynne Williams, Mr. H. P. Winsbury-White.

Members: Dr. F. Shirley Adams, Dr. G. C. B. Atkinson, Dr. C. V. N. Baldry, Sir Norman Bennett, Dr. A. V. Bernays (Birmingham), Dr. Mason Bolam (Newcastle), Dr. R. F. Bolt, Dr. J. Bromley (Castle Hedingham), Mr. H. B. Butler (Guildford), Dr. Harry Campbell, Dr. R. G. Chase, Mr. Guy de H. Dawson, Dr. John Freeman (Bristol), Dr. E. A. Gates, Dr. H. W. Gibson, Dr. W. S. Gross, Dr. H. P. Himsworth, Dr. N. G. Horner (Editor *B.M.J.*), Dr. E. R. Hunt (Hove), Dr. J. E. McDougall (Limpsfield), Dr. A. E. Martin (Elstree), Dr. R. O. Moon, Dr. G. E. Mould (Rotherham), Mr. Arthur Owen (Hampton), Dr. G. W. Pickering, Dr. Sidney Phillips, Dr. H. W. Pooler (Alfreton), Dr. Dan Powell (Cardiff), Dr. W. T. Gordon Pugh (Carshalton), Dr. C. Watney Roe, Mr. Lambert Rogers (Cardiff), Mr. R. S. Roper, Dr. G. L. F. Rowell, Dr. J. F. Ryan, Dr. Eric A. Scott, Dr. R. P. Smallwood (Chelmsford), Dr. G. Herbert Spencer (Newcastle), Dr. Herbert R. Spencer, Dr. R. J. C. Thompson, Dr. H. L. Tidy, Dr. J. R. R. Trist (Bristol), Dr. Bertram Watson (Harrogate), Dr. C. W. Windsor (Royston), Dr. R. Worth.

Others present: Lord Riddell, Mr. Harry Salmon, Mr. S. Forrest Cowell (Secretary), and Mr. Kennedy Cassels (Assistant Secretary).

ROYAL FACULTY OF PHYSICIANS AND SURGEONS

At the annual meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on November 7th, the following officers were elected: *President:* Mr. R. Barclay Ness; *Visitor*: Dr. J. M. Munro Kerr; *Honorary Treasurer*: Mr. J. H. MacDonald; *Honorary Librarian:* Dr. E. R. L. Oliphant.

Medical News

The annual dinner of the Medico-Legal Society will be held at the Holborn Restaurant on Friday, December 9th, at 7.15 p.m.

The annual dinner of the London (Royal Free Hospital) School of Medicine for Women will be held at the Savoy Hotel on Thursday, December 1st, at 7.30 p.m., with Miss Bolton in the chair.

The North-West London Medical Society will hold a dinner and dance at Grosvenor House, Park Lane, W., on Thursday, December 1st, from 8 p.m. to 2 a.m.

An inaugural luncheon of the newly formed British Health Resorts Association will be held at the Ritz Hotel, London, on Tuesday next, November 22nd. The chairman of the association, Lord Meston, will preside, and the principal speakers will be Sir E. Hilton Young, Minister of Health, Sir Thomas Horder, Lieut.-Colonel R. H. Elliot, and Dr. R. Fortescue Fox. Tickets (price 12s. 6d.) can be obtained from the honorary secretary, 28, Portland Place, W.1.

The Glasgow University Club, London, will dine at the Trocadero Restaurant, W.1, on Friday, December 2nd, at 7.15 for 7.30 p.m. Emeritus Professor Dudley I. Medley, M.A., LL.D., will be in the chair. Any Glasgow University men who, though not members of the club, desire to attend are requested to communicate with the honorary secretaries, 62, Harley House, N.W.1.

The annual dinner of the staff and past and present students of the Royal Dental Hospital of London will be held on Saturday, November 26th, at the Dorchester Hotel (Park Lane ballroom entrance). Professor W. H. Gilmour, LL.D., will be in the chair. Dinner at 7.0 for 7.30 p.m. Tickets, 12s. 6d. each (exclusive of wines). The Medical Committee will be "At Home" to all past and present students of the hospital from 9.30 a.m. to 5 p.m. that day. In the morning demonstrations will be given, and in the afternoon orthodontic and other cases of special interest from the clinic of the hospital will be shown.

An abridgement of Sir George Newman's Harveian Oration on "The Debt of Preventive Medicine to Harvey and the College of Physicians" appeared in our issue of October 22nd. The full text, beautifully printed, is now obtainable in pamphlet form from the British Periodicals, Ltd. (19, Cursitor Street, E.C.), price 1s. net.

The national committee for Great Britain and Ireland of the International Society for Microbiology has received information from the Berlin authorities that the international congress which was to have taken place in Berlin in 1933 under the presidency of Professor Hahn is, owing to existing world conditions, now postponed to 1934.

At the meeting of the Hunterian Society on November 21st, at 9 p.m., in Apothecaries' Hall, Water Lane, E.C., a discussion on "The influence of faith on disease" will be opened by the Rev. Father Woodlock, Dr. Robert Hutchison, and Dr. William Brown.

At the meeting of the Medico-Legal Society, to be held at 11, Chandos Street, W.1, on November 24th at 8.30 p.m., Dr. F. J. McCann will read a paper on the medico-legal significance of impotence in the male and in the female; a discussion will follow.

The next monthly clinical meeting for medical practitioners will be given at the Hospital for Epilepsy and Paralysis, Maida Vale, W.9, on Thursday, November 24th, at 3 p.m. Dr. W. G. Wyllie will demonstrate "Congenital syphilis." Tea will be provided, and it will be a convenience if those intending to be present will send a card to the secretary.

The third of the series of lectures on recent advances in physiology applicable to medicine will be given at the University of Durham College of Medicine, Newcastle-upon-Tyne, on Friday, November 25th, at 4.45 p.m. The lecture, entitled "The sensory control of respiration and of the heart-beat," will be delivered by Professor E. D. Adrian. All medical practitioners in the neighbourhood are invited.

In connexion with the National Conference on the Place of Biology in Education, to be held at B.M.A. House on November 30th and December 3rd, under the auspices of the British Social Hygiene Council, a public meeting has been arranged at the Essex Hall, Essex Street, Strand, on Thursday, December 1st, at 6.30 p.m., on biology and education. The principal speakers will be Dame Helen Gwynne Vaughan and Professor A. C. Seward. Admission is free, without ticket.

The Fellowship of Medicine and Post-Graduate Medical Association announces an afternoon course in infants' diseases at the Infants Hospital, Vincent Square, S.W., from November 28th to December 10th. A course in dermatology will be given at the Blackfriars Skin Hospital from November 28th to December 10th; it will consist of instruction in the out-patient department every afternoon from 2.30 p.m.; demonstrations of interesting cases will be given on November 29th and December 6th. Two demonstrations of medical ophthalmology will be given at the Royal Westminster Ophthalmic Hospital, Broad Street, W.C., as follows: December 7th, at 5 p.m., Mr. G. G. Penman, demonstration of fundi; December 8th, at 8.30 p.m., Mr. C. L. Gimblett, some points in medical ophthalmology (illustrated by epidiascope). A panel of teachers is available daily for personal tuition in almost all branches of medicine and surgery; arrangement for attendance at these clinics must be made through the Fellowship of Medicine, 1, Wimpole Street, W.1. The above courses and demonstrations are open only to members of the Fellowship.

A series of post-graduate lectures at the London Jewish Hospital, Stepney Green, E., commenced on November 17th, when Sir Humphry Rolleston presided over a lecture by Dr. Julius Burnford entitled "A survey of treatment." A lecture-demonstration will be given by Dr. Krestin on November 24th, at 4 p.m. Dr. Arnold will lecture on squint on December 1st, and Dr. Alan Brews on methods of dealing with prolonged labour on December 15th. The last lecture of the series will be on cholelithiasis, to be given by Dr. H. Gainsborough on Thursday, April 6th, 1933. All medical practitioners are invited to the lectures; tea will be served at 3.45 p.m.

The Jewish Health Organization of Great Britain has arranged a further series of free popular lectures on health subjects to be held at the Whitechapel Art Gallery on Saturday evenings at 8.30. The first lecture, on physical fitness, by Dr. Israel Feldman, will be given to-day, November 19th, with Dr. W. J. O'Donovan, M.P., in the chair. On November 26th Dr. A. S. MacNalty will lecture on the work of the Ministry of Health; on December 3rd Dr. J. N. Dobbie, the health work of the London County Council; on December 10th, Dr. Julia M. Browne, the health work of the borough council; on December 17th, Dr. Harley Williams, voluntary health work; on December 31st, Mr. E. Van Noorden, oral hygiene; on January 7th, Dr. R. Levinson, mental hygiene; and on January 14th, Dr. Y. Krupenia, the work of the Jewish Health Organization of Great Britain.

Dr. J. W. Leech, M.P., was elected Lord Mayor of Newcastle-upon-Tyne on November 9th. Among the other medical men elected mayors are: Dr. W. E. Llewellyn Davies (Llanidloes) re-elected; Alderman Dr. T. H. C. Derham (Preston); Dr. I. S. Fox (Chester); Dr. T. R. Griffiths (Kidwelly) re-elected; Dr. T. Martin (Tenterden); Dr. P. H. Seal (South Molton) re-elected; Surgeon-Captain John Stoddart, R.N. (ret.) (Berwick-on-Tweed) re-elected; Dr. G. H. H. Waylen (Devizes); Alderman T. B. Williams, M.B. (Stalybridge).

At the opening of the International Congress against Tuberculosis at The Hague last September it was decided that papers might be read in English, French, German, Italian, Spanish, and one Slav language.

A new monthly medical periodical, the *Revista de la Facultad de Medicina*, has been established by the National University of Bogotá, Colombia. It contains clinical articles, reports of meetings, and references to the current medical literature in America and elsewhere. The language is Spanish.

The returns for 1931 for the vital statistics of non-native officials of West Africa can be obtained from the Crown Agents for the Colonies, 4, Millbank, London, S.W.1 (price 6d.).

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the *British Medical Journal* are MUSEUM 9861, 9862, 9863, and 9864 (internal exchange, four lines).

The **TELEGRAPHIC ADDRESSES** are:

EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*

FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate Westcent, London.*

MEDICAL SECRETARY, *Medisecra Westcent, London.*

The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

QUERIES AND ANSWERS

Domestic Water-heating

"RAIN WATER" asks for information as to a practical method of using rain-water for the hot-water supply of a house instead of a water-softening plant, to prevent the deposit of lime in boiler and pipes.

Six medical readers have sent replies to the inquiry by "Hot-water" (November 12th, p. 904), each recommending a different apparatus. We have forwarded their suggestions to our correspondent.

Blood Groups in Disputed Paternity

"J. A. S. M." writes: I should be grateful for information as to the value of a blood test in proving the paternity of a child.

*** The blood-group test can never give positive evidence that a certain man is the father of a certain child. It can prove either that he may have been its father, or that he could not possibly have been its father. The test for one of the classical four groups will definitely eliminate a given man in about one case in six, but if the test for the M and N agglutinogens is also applied the proportion is increased to about one in three. When performed by a competent pathologist who is used to it the test is of undisputed value. A general practitioner who wishes to test a set of blood specimens should get in touch with the pathologist of the nearest large general hospital; if this officer is willing to undertake the test he will give the practitioner full instructions for taking and submitting samples, and will probably indicate the cost.

Income Tax

Assistant: Liability for Board and Lodging

"T. D. F." is going as a private assistant for six months; he is to receive a guinea a day (paying his own car expenses) plus his board, lodging, and laundry. Which will be best from the income tax point of view: (*a*) for his board and lodging to be paid for out of the practice receipts; or (*b*) for the amount—say at £150 a year—to be paid to him and for him to pay the actual expenses himself?

*** The former alternative would be better. In either case the practice can regard what is paid—either to "T. D. F." or his landlady—as allowable expenses, but whereas he would not be liable in the former case to assessment on the value of his board and lodging he would be liable in the latter case to tax on what is paid to him. The actual amount of tax payable for the six months would depend too much on his income for the remainder of the financial year or years concerned for any helpful estimate to be given.

Cessation of Wife's Income

"J. H. R." was married on November 12th, 1931. His wife had earned £130 for the period from April 5th, 1931, to the date of marriage; since then her earnings have ceased. Is he liable in any respect for tax on her earnings?

*** No. As regards the year to April 5th, 1932, the wife is liable personally in respect of tax on her earnings; the amount of tax on the £130 is almost *nil*, and as she then ceased to carry on her vocation there is no subsequent liability on her earnings, either for 1931-2 or 1932-3.

Depreciation Allowance on Electrocardiograph

"E. H." purchased a portable electrocardiograph in 1931 for £195, and asks for information as to the rate of depreciation allowable thereon.

*** We know of no standard or agreed rate for apparatus of this type, but believe that 10 per cent. has been allowed in somewhat similar cases; we suggest that no higher rate is likely to be obtained, but that "E. H." should press for that rate.

LETTERS, NOTES, ETC.

"Basic Blood Pressure"

Dr. G. Arbour Stephens (Swansea) writes: I feel certain you will allow me to draw attention to an interesting slip on the part of the reviewer of Dr. Beaumont's book on page 839 of your issue of November 5th. He very dogmatically insists that "Raynaud's disease is not due to the raising of the basic blood pressure," although he admits he does not know what basic blood pressure means. This lapse is all the more remarkable, as you allowed the report of a paper which was read by me before the Swansea Division on that very subject to appear in the *British Medical Journal* of *February* 8th, 1930 (p. 242), and that paper was followed by an article on "The basic blood pressure in Raynaud's disease" in the *British Medical Journal* of August 23rd, 1930. The last volume of the *Transactions of the Medical Society* contains a full account of the paper I read before that society on the subject of basic blood pressure and its estimation. These several references have been made in order to show that medical men have had ample opportunity of learning what is meant by the term "basic blood pressure."

A Conundrum by Wireless

Dr. Frank Portas (Hove) writes: To my mind the "Conundrum by wireless," as reported by Dr. Harris (November 5th, p. 843), may be answered ninety-nine times out of a hundred as malaria. It is possible, but not probable, that one of the other causes may have operated here, giving an example sometimes met with of one condition simulating all the typical signs of another. I must confess that the fact of my making the diagnosis after reading the messages and before reading the diagnoses given was greatly due to the fact that when I was a patient in a military hospital the man in the next bed had exactly similar symptoms, and having nothing else to do all day I was able to follow every phase of his case, which was soon diagnosed as malaria by blood films.

*** The correct answer to the "conundrum" was malaria.

Actinotherapy for Eczema

Dr. W. Annandale Troup (London, W.) writes: I read with dismay the following sentence in Dr. G. B. Dowling's article on the infective eczemas of the scalp in your issue of November 5th: "In both adults and children artificial light therapy, whether the carbon arc or mercury vapour lamp be used, is ineffective." This is a general statement which in my opinion is wrong and utterly misleading. Those of us who specialize in light therapy during the course of the year treat many cases of chronic eczema of all types which have defied the efforts not only of the general practitioner, but also of the skin specialist. It should be borne in mind that these patients consult, or are referred to, the light specialist as a last resource. I have just completed, with success, the treatment of a patient who has suffered from chronic eczema intermittently for thirty years. During the last year his symptoms have been markedly aggravated, the eczema affecting both nostrils, the left ear, and the upper eyelids. His treatment consisted of general irradiation by means of the titanium alloy arc and local irradiation of both nostrils, external ear, and eyelids by suitable quartz applicators attached to the Kromayer lamp. One cannot help thinking that faulty results are due to faulty technique. In all such cases the Kromayer lamp should be used. I am convinced from an extended experience that a large percentage of such cases can be cured if appropriate technique and apparatus are used.

Indications For and Against Caesarean Section

Dr. Janet Milner Campbell Gray (London, S.E.) writes: I was interested in your report (October 29th, p. 796) of the discussion on this subject. I sometimes think Caesarean section is advised where it is not absolutely necessary. I have been working in India since 1892 to the end of 1928, except for a little over a year when on furlough during the war. An American patient I had applied to two hospitals, and they refused to take her unless she would agree to Caesarean section; she had a contracted pelvis, but I told her if she had been an Indian woman I would not have expected any trouble. She was going to the hills for six months, and I advised her to walk a great deal and not to eat too much. She came into hospital, which was on the plains, a week or so before delivery; labour lasted three hours, and a healthy baby of six pounds was delivered by forceps with great ease. On returning from holiday I found a Hindu woman in, who was admitted for Caesarean section; on my late evening round she was sleeping happily; in the morning I found that she had a living baby, after a very easy normal labour. But in India there are a great many cases of contracted pelvis due to osteomalacia where Caesarean section is the only way in which delivery is possible, and is usually so extreme that I do hysterectomy also, for the osteomalacia increases very rapidly all the time of pregnancy. Also, when the patient is admitted with a ruptured uterus, and the foetus has been dead some time, I remove it, for, if not, the woman would certainly die of septicaemia. Latterly I did not see nearly as many bad cases as I did thirty years ago.

Corrigendum

The footnote to our annotation on asthma research last week (page 891) was incorrectly worded. Copies of the report can be obtained gratis from the secretary, Asthma Research Council, c.o. King's College, Strand, W.C.2.

Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 44, 45, 46, 47, 50, and 51 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 48 and 49.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *263*.

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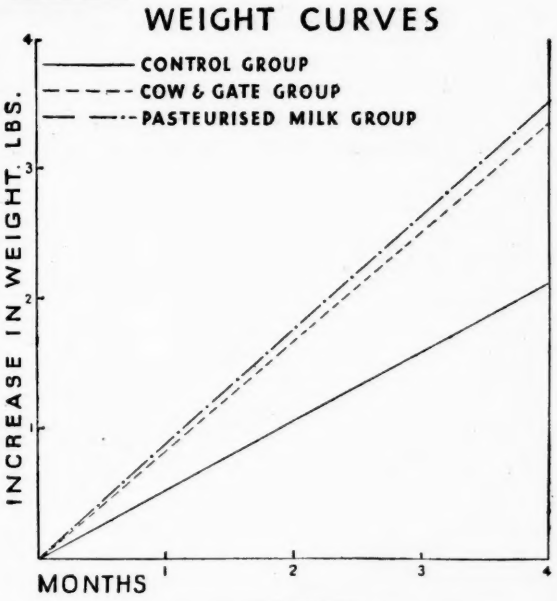

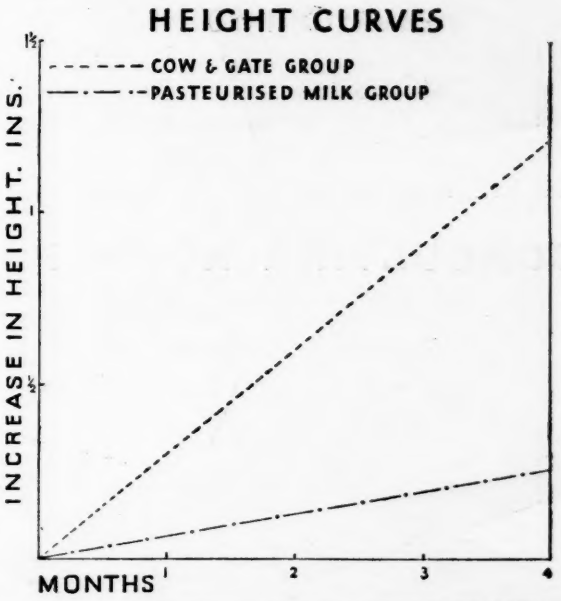

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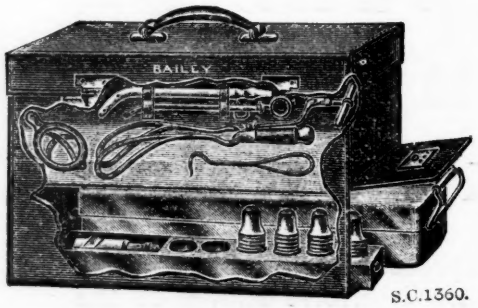

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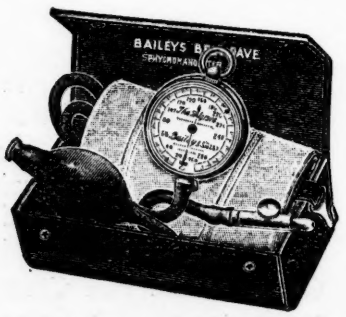

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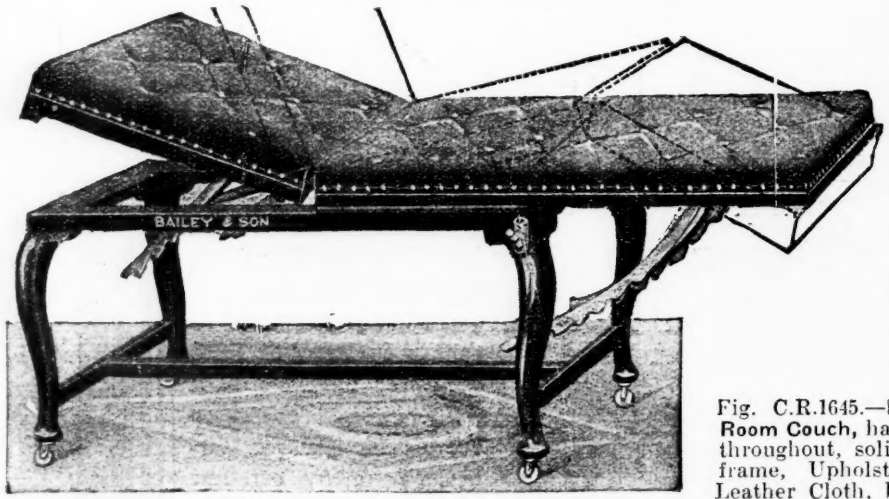

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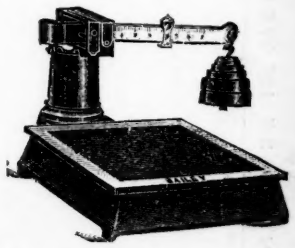

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